



This man went from IT zero to IS hero. You can, too. Managing, page 65

Steve Jobs claims he isn't interested, but pressure is mounting to make him Apple's chairman. All should be revealed this week at Macworld. Page 28

COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
August 4, 1997 • Vol. 31 • No. 31 • 132 pages • \$3/Copy \$48/Year

Visa boosts Java's credit line

► Smart cards will redefine how plastic is used

By Sharon Gaudin

IN A FEW YEARS, millions may reach for their Visa card instead of change for the tollbooth or a company security card.

In the biggest Java win to date, credit-card giant Visa International, Inc. early next year will begin replacing the magnetic strips on its cards with Java-based computer chips.

The move is expected to redefine the Visa card as Americans know it by transforming a static form of currency into a new purchasing and identification tool. Visa has called it "the ultimate personal computer."

Industry observers predict the new "smart card" will revolutionize the way people spend money.

"Java is critical. It's the fundamental building block for our success with chip cards," said Philip Yen, Visa's senior vice president for the chip platform. "Java will make it a lot easier to develop applications and get

Visa, page 16

Outsourcing can cut Web site expenses

By Mitch Wagner

HAVING SOLVED the question of whether to get up on the World Wide Web, many users have moved on to another debate: Should electronic commerce be outsourced because it is so complex, or kept in-house as a strategic effort?

The outsourcing of electronic commerce is gaining momentum. Transportation company Caliber Systems, Inc. last week signed a multimillion-dollar deal. And vendors Exodus Communications, Inc. and General Electric Information Services announced new offerings.

Users such as Caliber hope outsourcing will help them get a handle on the complicated technology and business problems of electronic commerce and the Internet. Outsourcing is seen as

Outsourcing, page 100

E-commerce demands e-normous patience. That's the

lesson the Web site development team at catalog retailer Spiegel, Inc. learned from more than two years of experiments. Spiegel's crew — until recently volunteers — shares what they learned from their quest to build a profitable (yes, profitable) electronic-commerce site. The Internet, page 47



James Summers, Barbara Vaughn, Randy Heiple

Microsoft stance roils users

► Threat to cross-platform elicits strong disapproval

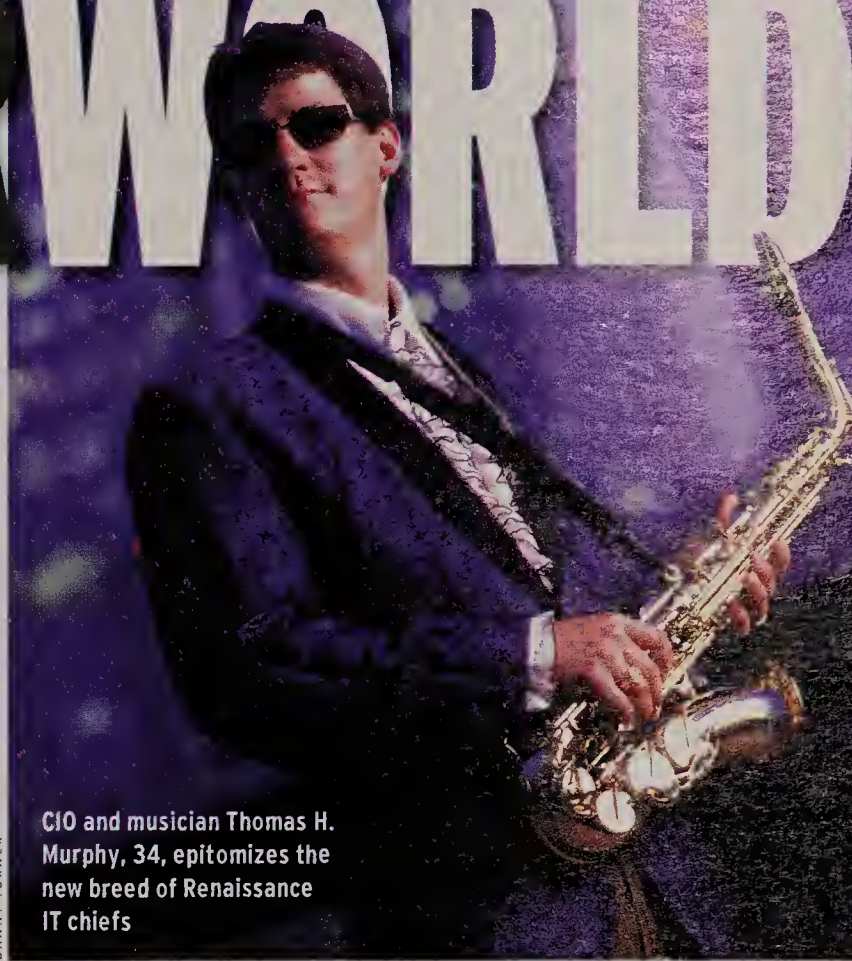
By Carol Sliwa and Sharon Gaudin

USERS AND CORPORATE developers last week expressed a mix of reactions — from alarm to knowing shrugs — in recogni-

tion that cross-platform Java may be compromised if Microsoft Corp. persists in its refusal to support Sun Microsystems, Inc.'s Java Foundation Classes.

While some observers said they understand Microsoft's desire to protect its interests, most who spoke with *Computerworld* disapproved of Microsoft's bid

Microsoft, page 100



CIO and musician Thomas H. Murphy, 34, epitomizes the new breed of Renaissance IT chiefs

SUPER CIOs

► They're young, business-savvy and getting rich

By Julia King

WHEN Bristol Hotels & Resorts went looking for a CIO last year, it didn't advertise the position or call a headhunter.

Instead, the Dallas company spent 10 months quietly trolling the tourism industry for an "entrepreneur" and "charismatic leader," said Richard Beckert, Bristol's senior vice president of administration. The company wasn't primarily looking for technical skills.

And it didn't get them. Bristol in early July hired Thomas H.

Murphy, a high-energy sales and marketing executive with experience in the hotel and telecommunications businesses. At 34, Murphy epitomizes the new breed of Renaissance executive that companies are clamoring to hire as chief information officers — often with golden paychecks.

The new-wave CIOs are young, extremely business-savvy, creative and strong leaders, recruiters said. They also have an interesting life outside the office — a good sign of a Super CIOs, page 24

INSIDE THIS ISSUE

COMPAQ'S HIGH-FIBRE DIET

Upcoming Fibre Channel support to boost NT clusters. Page 2

SUPPORT IS A BROWSER AWAY

Cisco offers users Web-based management tools. Page 4

Virtual data marts

IS resists user demand for a mart in every department. Page 8

SLIM IS IN FOR THE FALL

Vendors prepare generation of leaner, meaner laptops. Page 17

U P F R O N T

Sunblock

Microsoft has said it will embrace Java, Sun's portable programming language. But its embrace will be the kind of squeeze a boa constrictor puts on its victims before it crushes the life out of them.

The strategy is a carrot-and-stick approach called J/Direct. J/Direct is a set of Windows-specific interfaces that let Java applications call Windows services directly. The carrot is the promise that Java developers can use J/Direct to do neat things with Windows if they just give up cross-platform compatibility. The stick is fear: Use J/Direct or your competitors surely will.

The message will hit developers in the wallet and should be effective at splintering the Java market. How sad for users, who once again will have their hopes of platform independence dashed. But users aren't Microsoft's problem right now. Defending the fortress is. And Microsoft really has no choice but to try to take control of Java. It can't ignore Java and

cede the high ground to Sun.

But it must discredit Java's cross-platform message, which is so dangerous to Windows.

Microsoft is being quite nasty in the process. Its statements position Sun as some kind of scoundrel

trying to foist a secret second operating system on users. And its withering criticism of Java's performance problems are absurd, given that Java is barely 18 months old. Remember, it took Microsoft five years to get Windows relatively stable.

But the counterpunch is effective and puts Sun in a difficult position. If it submits Java to a formal standards body, Java will die the death of a thousand meetings. If Sun retains control, Microsoft will continue to attack Java as proprietary. Sun's only comeback is to demonstrate that it can support and enhance Java in an open manner. That's a tall order against a giant competitor who wants to do just the opposite.

Paul Gillin, Editor
Internet: paul_gillin@cw.com



Compaq adds Fibre Channel to high-end Pentium servers

► Technology promises faster backups, higher level of data protection

By April Jacobs

COMPAQ COMPUTER CORP. plans to support Fibre Channel technology for high-end Pentium servers in the fourth quarter, *Computerworld* has learned. That would mean faster backups and better data protection for Windows NT clusters.

Fibre Channel, a high-speed connectivity technology, lets businesses connect servers with their attached disk arrays to back up data more quickly than with traditional SCSI-based devices.

Fibre Channel support is already common for RISC-based machines from vendors such as IBM and Sun Microsystems, Inc. But Compaq's move will bring Wintel platforms to a new level, said John Dunkle, president of Workgroup Strategic Services, Inc. in Portsmouth, N.H.

COST BENEFIT

The ability to cluster Pentium-based NT servers is expected to come from Microsoft Corp.'s Wolfpack clustering software next year. That will drive down the cost of high-availability storage, because Pentium-based machines are less expensive than their RISC-based counterparts, Dunkle said.

"I think there are going to be many companies who buy in to this very quickly," he said.

"We're upgrading to Fibre Channel to increase the speed between servers and our storage capacity," said Sushiel Vyas, assistant vice president of the Cap-

Fibre Channel technology on the Intel platform will give users:

- Secure data storage and retrieval
- Faster, better remote storage options than traditional SCSI
- Cheaper hardware option

ital Markets Technologies Division at First Union Bank in Charlotte, N.C.

"Our goal is to implement a Fibre Channel network within the next six months to segment and separate the physical nodes of our forthcoming Windows NT cluster," Vyas said. "We're going to put the cluster servers in two separate and distinct locations to safeguard in case of

natural disaster."

Vyas said SCSI connections aren't fast enough for his company's financial transactions and batch processing jobs. "We need the 100M byte/sec. fast Fibre Channel connections to facilitate server-to-server communications," he said.

SECURITY SELLS

Rob Enderle, an analyst at Giga Information Group in Cambridge, Mass., said he expects larger firms to buy in to Fibre Channel because it is a secure platform for data protection.

Because Fibre Channel provides high-speed data transfer to off-site storage, less data will be lost if the system crashes, Enderle explained.

"This plays to the same [enterprise] audience that's waiting for Wolfpack," Enderle said. □

Senior editor Laura DiDio contributed to this story.

Navy mulls NC commitment

By Sharon Machlis

THE U.S. NAVY hopes to radically streamline administrative chores with network computers, according to Chief Information Officer Marvin J. Langston.

"So far, it looks pretty exciting," he said.

The Navy is conducting network computer pilot programs with all the major vendors, running groups of 20 to 50 systems to study effects on the overall network, other clients and

applications.

The project's goal is to boost the number of clients per administrator from fewer than 50 now to "up in the hundreds."

Such productivity gains have been achieved in industry with fat clients, Langston said, but a network computer hardware configuration forces more efficiency.

The Navy expects to decide on whether to make major network computer purchases within six to eight months. □

THE FIFTH WAVE

BY RICH TENNANT



E-mail Rich Tennant at the5wave@tiac.net

COMPUTERWORLD

For these and other related links, point your browser at www.computerworld.com/links/970804fibrelinks.html

► The Fibre Channel Association:
www.amdahl.com/ext/CARP/FCA/FCA.html

► Fibre Channel 97 and Beyond:
www.emfassoc.com/fc97.htm

Come visit our Web site @ Computerworld

- IT TAKES ONE TO KNOW ONE Advice on how IS professionals can better manage the process of finding technical talent. (www.computerworld.com/careers)
- AUDIO FEATURES Non-techies in charge: IS management analyst David Foote talks with *Computerworld's* Rick Saia about what nontechnical managers can bring to IS. (www.computerworld.com/cbc)
- Tim Berners-Lee talks about the future of the Web, a medium he helped invent. To be posted Aug. 6. (www.computerworld.com/cbc)

Sun, NCR make Solaris/WorldMark deal

► Agreement could give Sun access to next-generation 64-bit chip technology

By Jaikumar Vijayan

CALL IT Sun's Trojan horse strategy.

A licensing agreement to be announced today between Sun Microsystems, Inc. and NCR Corp. could give Sun backdoor access to next-generation IA-64 chip technology being developed by Intel Corp. and Hewlett-Packard Co.

Under the agreement, Sun will license its Solaris operating system to NCR, which will offer it as an option on its WorldMark line of Intel servers.

Sun also will announce that it is making NCR's WorldMark a

reference platform for future development of Solaris, *Computerworld* has learned.

"It is one of the smartest moves they could have made at this point," said an analyst briefed on the announcement.

PLANNING FOR THE FUTURE

In the short term at least, the deal does little more than give NCR users a 64-bit Unix operating system option on their Intel servers. NCR's WorldMark series is a line of scalable servers ranging from two-processor models to systems that can support hundreds of Intel processors. The availability of Solaris

will let users take better advantage of the scalability.

"Getting more market presence for Solaris is obviously also a good thing" because it gives users cheaper options to Sun's Solaris servers, said Rex Hayes, a design engineer at the advanced product development group of Eastman Kodak Co. in Rochester, N.Y.

The real significance of the

deal, though, lies in its long-term potential for Sun, said analysts briefed on the announcement.

ANTICIPATION

Although IA-64 technology is nearly two years away from delivery, its arrival is already being watched with great interest by systems vendors. The hybrid chip combines elements of RISC and X86 chip technologies and promises to run Windows NT and Unix applications

much faster than current technologies, including Sun's UltraSPARC.

For Sun, which has studiously avoided the Wintel camp, the IA-64 architecture is widely expected to present a major technical challenge.

But by linking with NCR and using WorldMark as a reference platform, Sun will have access to the same technology as other vendors without having to go directly to Intel or abandoning its UltraSPARC chips. □

Du Pont's Hallman to update business methods

By Thomas Hoffman

CINDA A. HALLMAN, Du Pont Co.'s cost-cutting chief information officer, has been promoted to global vice president in charge of purchasing and business process modernization.

Hallman is credited with slashing \$550 million from the Wilmington, Del.-based chemical giant's information systems operations and with engineering Du Pont's 10-year, \$4 billion information technology outsourcing contract, which was signed in June with Computer Sciences Corp. (CSC) and Andersen Consulting.

Hallman will continue to oversee Du Pont's global IS operations and continuous busi-

ness improvement. In her new role, she will take on the responsibilities of global purchasing and business process modernization.

CHANGE IS YOUR FRIEND

Hallman said the toughest part of her new job will be to get people to accept change and modify their work habits.

"You have to build a compelling economic case" for employees to accept business process modernization, Hallman said. Once that is established, workers are more willing to change "if they can be participants" in the improvement process, she said.

"You have to build a compelling economic case" for employees to accept business process modernization.

— Cinda A. Hallman, Du Pont

ness improvement. In her new role, she will take on the responsibilities of global purchasing and business process modernization.

Robert Ridout, former director of Du Pont's global information utility, replaced Hallman as CIO effective last Friday. Ridout was responsible for orchestrat-

Hallman declined to estimate how much Du Pont's business process modernization program is expected to save. Despite the company's enormity — Du Pont has 80 business units around the world — the company already runs a pretty lean operation.

Du Pont "is right on top [of its

operations]. They can't afford not to be to remain competitive today," said Thom Brown, managing director of research at Rutherford, Brown and Catherwood, Inc., a Philadelphia-based brokerage.

Hallman, who started her career at Du Pont's Conoco oil and gas subsidiary in 1966, said the changes she helped drive at Du Pont during her six-year tenure as CIO will help her in her new role.

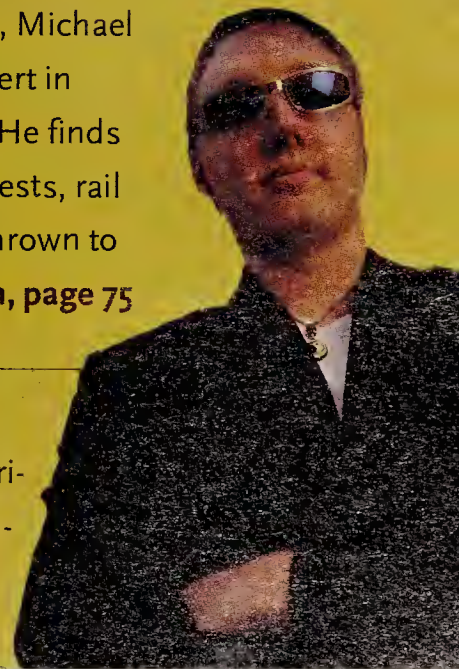
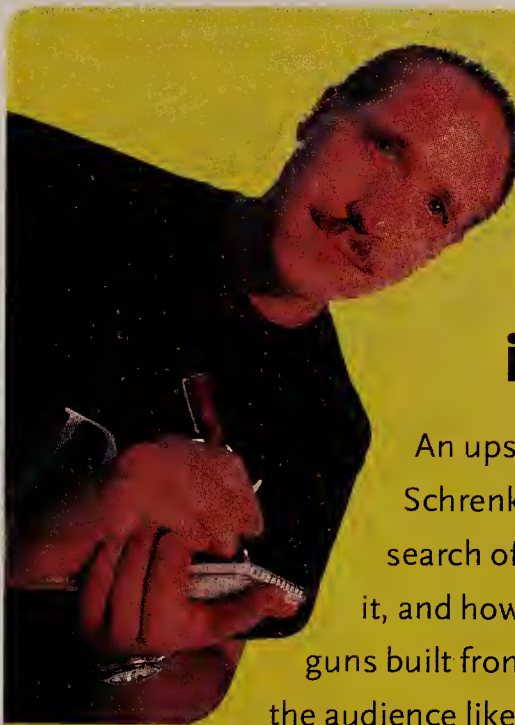
But she isn't looking at the business process modernization program through rose-colored glasses.

"I fully expect that if you call me in six months, I'll have a few war stories to tell," she said. And no doubt a few victories to share as well. □

FEAR & HACKING in Las Vegas

An upstanding IS consultant, Michael Schrenk (left) goes to the desert in search of DEF CON depravity. He finds it, and how: "Spot the Fed" contests, rail guns built from scrap, cell phones thrown to the audience like party favors. **In Depth, page 75**

Do you really want to hire them to guard your systems? In IT Careers, we look at hackers-turned-security-pros such as Matthew Harrigan (right) and whether anyone is willing to hire them. **Page 78**



NT gets defragmentation tool

By Laura DiDio

MICROSOFT CORP. last week inked a technology pact with Executive Software International, Inc. to include a manual version of Executive Software's Diskeeper defragmentation software in future releases of Windows NT.

Executive Software in Glendale, Calif., has been shipping its Diskeeper defragmentation package for the past three years.

Diskeeper consolidates free disk space on PCs and workstations and improves Windows NT Server throughput by speeding file storage.

Using Diskeeper can halve

the time it takes to load software and perform database searches.

As the version in Windows NT 5.0 will be a manual one, Microsoft suggests that network administrators upgrade to the "Set It and Forget It" version of Diskeeper for automatic defragmentation of servers and workstations across the network.

Users such as Ed Young, network manager at Utah State University in Logan, said having Diskeeper included in Windows NT will potentially save him hundreds of manpower hours each year. This is because he will no longer have to load a separate copy of Diskeeper onto his NT servers and workstations. □



Omron's Barry Veltz used a virtual private network to link customers to their orders. The Enterprise Network, page 49

During the recent hurricane, an Alabama company outsourced disaster-recovery plans to stay dry. Corporate Strategies, page 41

In this issue

NEWS

- 6 E-mail migration tools** don't work as smoothly as vendors claim, users say.
- 10 Cisco preps router software** to give faster mainframe database access.
- 12 Messaging rivals** Lotus and Microsoft plan to integrate Internet Explorer with Notes.
- 12 IBM shops breathe easier** knowing that Big Blue plans to upgrade Token Ring speeds.
- 14 Year 2000** and surging server demand will power a growth in sales of high-end Unix boxes, analysts project.
- 14 Unix is still** the market leader on the shop floor, but Windows NT is catching up fast, a new study says.
- 20 Major security players** form alliance designed to ease the use of their products together.
- 28 National Semiconductor buys** Cyrix in bid to compete with Intel.
- 29 SAP, Oracle and PeopleSoft** are among vendors who support a common set of connections between applications.

OPINION

- 33 Don't be surprised** if building an extra-net means fixing your customers' IS problems, John Gantz advises.
- 70 Warn your staff** about raiders' bait-and-switch tactics, Leilani Allen urges.

TECHNICAL SECTIONS

CORPORATE STRATEGIES

- 41 Companies leverage improvements** in workflow applications for strategic benefits.
- 41 BankBoston's merger welds** disparate computer networks, servers and desktops.

THE INTERNET

- 47 Allmerica Financial builds** an extra-net to sell insurance in three states.

- 47 Facing an antlike march** of browser bugs, IS managers simplify desktops and keep users informed.

THE ENTERPRISE NETWORK

- 49 Proliferating NT servers** challenge IS: Use tools or implement an enterprise management system.
- 49 Microsoft's cost-of-ownership** plans win kudos, but users want NT 5.0 tangibles.

SOFTWARE

- 55 Informix users**, long devoted to Unix, start to heed the Windows NT call.
- 55 Scientists gain** online access to DNA database through an object-based application.
- 55 Robert Mondavi vineyards** leans on its AS/400 applications to cultivate overseas business.

SERVERS & PCs

- 61 Should they stay or go?** The year 2000 problem forces minicomputer users to decide.
- 61 Dell targets** financial market users with low-cost Pentium II workstations.
- 61 Closer Look:** Tape storage wins new users as it gets faster and more reliable.

FEATURES

MANAGING

- 68 Browse?** Who has the time? IS managers turn to the Web for information they need now.

BUYER'S GUIDE

- 71 Review: Netscape's** Communicator shows good enterprise tools.
- 72 Four push technology** offerings aren't perfect, but they hold promise.

ETC.

Company index	99
Editorial/Letters	32
How to contact CW	99
Inside Lines	102
Stock Ticker	98

Cisco pushes to Web, but will users jump?

► *Web tools said to be best way to manage system*

By Patrick Dryden

CISCO SYSTEMS, INC. this week will begin to wean customers from their old management habits.

No more issuing cryptic commands directly to Cisco routers and switches. No more running the CiscoWorks management console in the command center and via X Window System.

Now Cisco wants users to manage its devices through the Resource Manager suite of tools running on a World Wide Web server.

An operator can inventory all the Cisco devices, analyze performance data and upgrade software from any browser. Support resources will be just a hyperlink away.

Not all users are eager to make the jump to Web-based management.

"This tool won't give us much that we don't already have in CiscoWorks. But it sounds a lot more flexible," said John Ray, telecommunications engineer at the Lexis-Nexis operations center in Dayton, Ohio.

By eliminating the need for X Window sessions with the CiscoWorks platform, Resource Manager could save a lot of setup work and open access to more staff, Ray said. "As time goes by, we probably will follow their lead to the Web," he said.

Through its "quick and easy interface," Resource Manager significantly helps network support staff check software versions on all routers and switches at one time, said beta tester Diane Aufderhar, information technology planner at USAA Information Technology Co. in San Antonio.

The Resource Manager automates many of the functions in CiscoWorks, according to beta tester James Mancini, engineering manager at Virtual Networks, Inc., an integrator in Irvine, Calif.

Checking configurations and distributing new software re-

leases "required a lot of custom scripting in CiscoWorks," Mancini said. Instead, Resource Manager can fetch the latest versions from Cisco's online library and upgrade the appropriate routers at customer sites, he said.

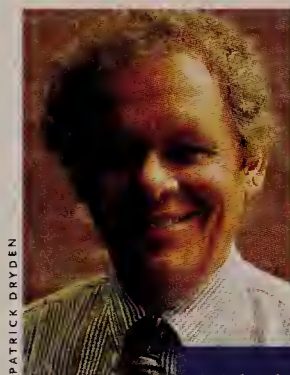
TOO SIMPLE?

Such automation is greatly appreciated by organizations with limited support staff, said Joe Askins, data communications director at Arizona State University in Tempe. But he is leery of Cisco's sales pitch.

"I hate to be a skeptic, but this tool's automation sounds too simple," Askins said. He said he is more comfortable having the school's engineers "go right in to the guts of the routers to do their black magic."

The majority of Cisco users still work this way, said John Morency, a principal at network consultancy The Registry, Inc. in Newton, Mass.

For them, Resource Manager "will be a major shift," Morency said. But high-level supervisors can benefit immediately, he said. "Those who supervise the techies can quickly find out what changed overnight or over the weekend," he said.



"I hate to be a skeptic, but this tool's automation sounds too simple."

— Joe Askins, Arizona State

"With their head on the chopping block with upper management for reliable network operation, they need a tool for an instant explanation about what went wrong and how to fix it," he said.

Resource Manager runs on a Solaris server and works with any Java-capable browser. It costs \$5,995 but is free for users with Cisco service contracts. It will be included with the next version of CiscoWorks, due this month, as Cisco shifts its users from big management servers to the Web. □



LOOKING FOR A FASTER WAY TO LOAD YOUR DATABASE?

SyncSort UNIX can help you complete database loads, reorgs and reports in as little as *half the time*.

SyncSort combines high-speed sorting, versatile data manipulation features and the ability to handle a variety of data and file types. The result is a powerful, flexible tool for breaking database bottlenecks. To order SyncSort or for a free copy of our booklet, "Sorting and Relational Database Performance," please call or fax.

©1997 Syncsort Incorporated.



Tel (201) 930-8200 dept. 870WS
Fax (201) 930-8290 dept. 870WS
<http://www.syncsort.com/870ws>

Users laud NT Enterprise

► Beta testers give high-five to cost, reliability, performance of Edition 4.0

By Laura DiDio

SO FAR, SO good.

That's the consensus of beta users testing Microsoft Corp.'s Windows NT Enterprise Edition 4.0, which is due in the third quarter.

Eight businesses, including two Fortune 500 accounts, gave the operating system a thumbs-up for its cost-effectiveness, performance and reliability.

The NT Enterprise edition will feature built-in, two-way fail-over clustering support to ensure 100% network uptime; support for 3G bytes of memory, compared with the standard 2G bytes in Windows NT 4.0; and the option to buy from one- to eight-way symmetrical multiprocessing (SMP) for greater scalability.

The current release of Windows NT Server 4.0 scales to only four processors.

"The Windows NT Enterprise beta is good stuff. We've stressed it every way imaginable for the past four months and have been hard-pressed to get it to crash," said Sid Vyas, assistant vice president at the Capital Markets Technologies division of First Union Corp. in Charlotte, N.C.

Vyas said he found the Wolfpack clustering in the NT Enterprise edition to be much better at handling wide-area traffic than Novell, Inc.'s NetWare SFT III.

COSTLY DOWNTIME

"The clustering and inherent security in NT Enterprise are crucial for us. Without it, we could be looking at \$1 million in lost data and productivity each hour that our networks are down," Vyas said.

Wolfpack clustering and the NT Enterprise edition's support

for eight-way SMP also are the big lures for Andy Doran, MIS manager at PMP Corporate Systems Ltd. in London. "Eight-way SMP and the built-in redundancy that the clustering provides are must-haves for us. If our networks crash, business stops. It's that simple," Doran said.

An information systems manager at a top New York brokerage who requested anonymity said he has encountered only a few minor glitches involving SCSI adapters. The manager said he liked the increased support for 3G bytes of memory. "It's not clear that we'll need it immediately, but we have over 10,000 users. So it's nice to know it's there; I consider it a freebie," he said.

Dennis Martin, president of the Windows NT Rocky Mountain Users Group in Denver, which has more than 2,000 members, agreed. The featured topic at the group's June meet-

ing was Wolfpack clustering; 500 people showed up, more than three times the normal turnout of about 150, he said.

"Obviously, Wolfpack clustering is one of the main reasons to buy NT Enterprise. Many of our Exchange Messaging Server users were especially interested because it will assure them of near-100% uptime," Martin said.

PRICE NO BIGGIE

Users said they will fight hard to get the best price deal from Microsoft. But most said they wouldn't balk at the estimated \$4,000 price tag for a 25-user version of NT Enterprise. The same configuration of Windows NT 4.0 costs \$1,468.

"NT Enterprise will more than pay for itself in the event of a network outage. The cost of lost data is incalculable, so we're not complaining about pricing," Doran said.

Henry Eckstein, chief information officer at York Claims

Window NT Enterprise Edition 4.0 supports:

- Eight-way symmetrical multiprocessing
- Microsoft Cluster Server with automatic fail-over
- Cross-platform Win32 APIs
- Microsoft Transaction Server
- Enhanced version of Microsoft Message Queue Server
- 3G bytes of memory

Services, a nationwide claims firm in New York, agreed. "I'm going to start testing NT Enterprise. If it lives up to its billing and saves me even one hour out of the 20 hours I now spend troubleshooting the network, then I'll buy it, because my time is valuable," Eckstein said. □

& NT 5.0 plans win kudos, but users want to see it in action. Page 49

E-mail migration tools fall short of vendor promises; new offerings ahead

By Barb Cole-Gomolski

WHEN MIGRATING from a mainframe-based E-mail system to Microsoft Corp. Exchange, Capital Blue Cross knew it could buy gateways that would let users swap messages and directory information between the two systems.

But then there were the thousands of electronic-mail mes-

sages locked up in the old system. Those messages were a corporate repository of correspondence, contracts and projects too valuable to leave behind.

"It was not feasible to have users [manually] forward these E-mail messages to the new system," said Dave Gernert, technology specialist at Capital in Harrisburg, Pa., which is moving about 3,000 users from Na-

ples, Fla.-based Fischer International, Inc.'s Tao E-mail system.

Like many sites, Capital learned that the migration tools offered by the leading messaging vendors, such as Microsoft and Lotus Development Corp., go only so far. As a result, sites may wind up running dual messaging systems during what turns out to be a longer-than-planned migration.

"E-mail migration tools [from the leading messaging vendors] have fallen short," said Mike Roszkowski, an analyst at Creative Networks, Inc., a research firm in Palo Alto, Calif.

LIST OF WOES

Users typically complain about the shortage of tools to handle the assortment of legacy E-mail systems out there. The tools that do exist can't handle old messages, calendar information and custom-built forms, Roszkowski said.

Lotus sites gave high marks to the company's tools designed to move users from IBM OfficeVision to Notes. But users at one site said that after evaluating software to move from Digital

Equipment Corp.'s All-In-1 to Notes, they decided not to migrate any information from the legacy system and simply start afresh with Notes.

Another option is supplementing the migration tools provided by companies such as Lotus, Microsoft and Novell, Inc. with third-party offerings,

getting data off the legacy system," Winterton said.

"In many cases, the time and energy [involved in migrating data from a legacy mail system] is not worth the effort" to retain the legacy data, said Gregg Aamoth, manager of the applications solutions division at MicroAge Solutions, a systems integrator in Novi, Mich.

At Capital, IS purchased migration tools from third-party vendors. It turned to LinkAge Software, Inc. in Ottawa — which was bought out by Microsoft last month — for a tool to synchronize the messaging and directory

pieces. CompuSven, Inc. in Naples, Fla., provided the software to migrate the legacy data.

"In the ideal world, your messaging vendor would come in ready to go with all the tools you need to migrate. But that doesn't happen," Gernert said.

Roszkowski said Microsoft's buyout of LinkAge and Lotus' push to get third-party Notes migration tools shows that the vendors are paying attention to this issue. "But they don't have a lot of incentive to do a good job with these tools. These are the kinds of products that people buy once, use and throw away," he said. □

TIPS FOR MIGRATING

- Migrate groups of users that work together at the same time
- Encourage users to weed out nonessential messaging and folders
- Consider the breadth of migration tools offered by messaging vendors
- If migration takes more than a year, consider using tools that will make it possible to keep the old and new system up and running
- Recognize that in many cases calendaring data and custom forms can't be moved easily from the old to the new system

"In the ideal world, your messaging vendor would come in ready to go with all the tools you need to migrate. But that doesn't happen."

**— Dave Gernert,
Capital Blue Cross**

which is what Capital did. "But it isn't cheap," said Joyce Graff, an analyst at Gartner Group, Inc. in Stamford, Conn.

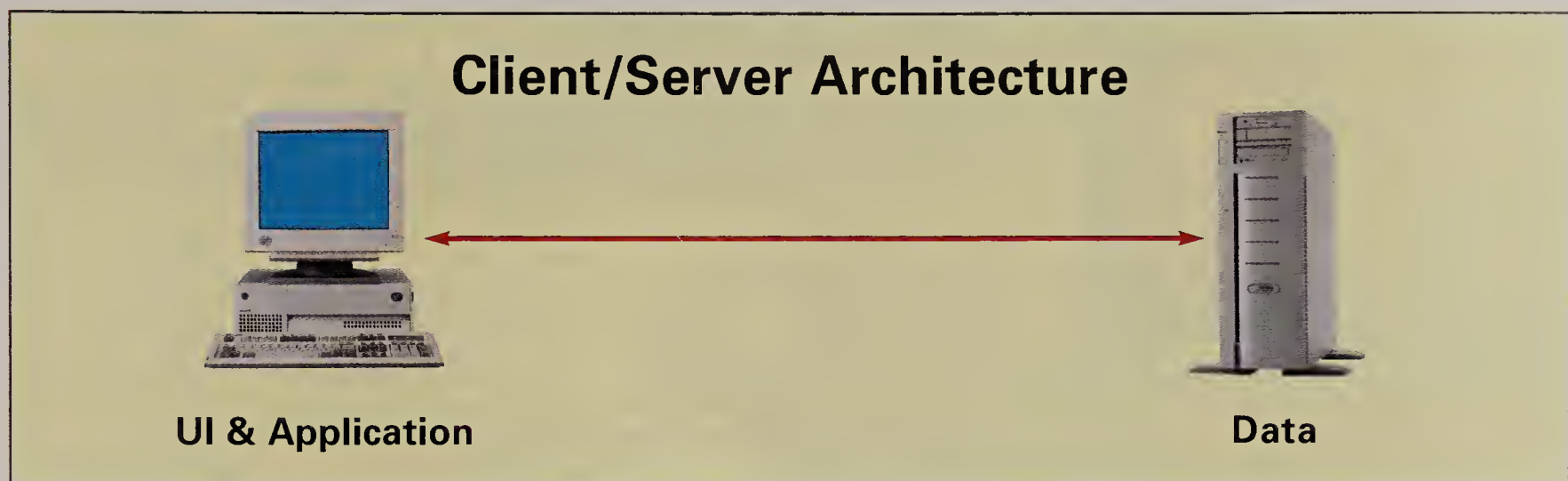
Other companies have simply set limits on how much information is moved.

"We do have a utility that downloads old messages, but there's no migration plan for bulletin boards or forms," said Bob Winterton, a systems specialist at Consolidated Edison Company of New York.

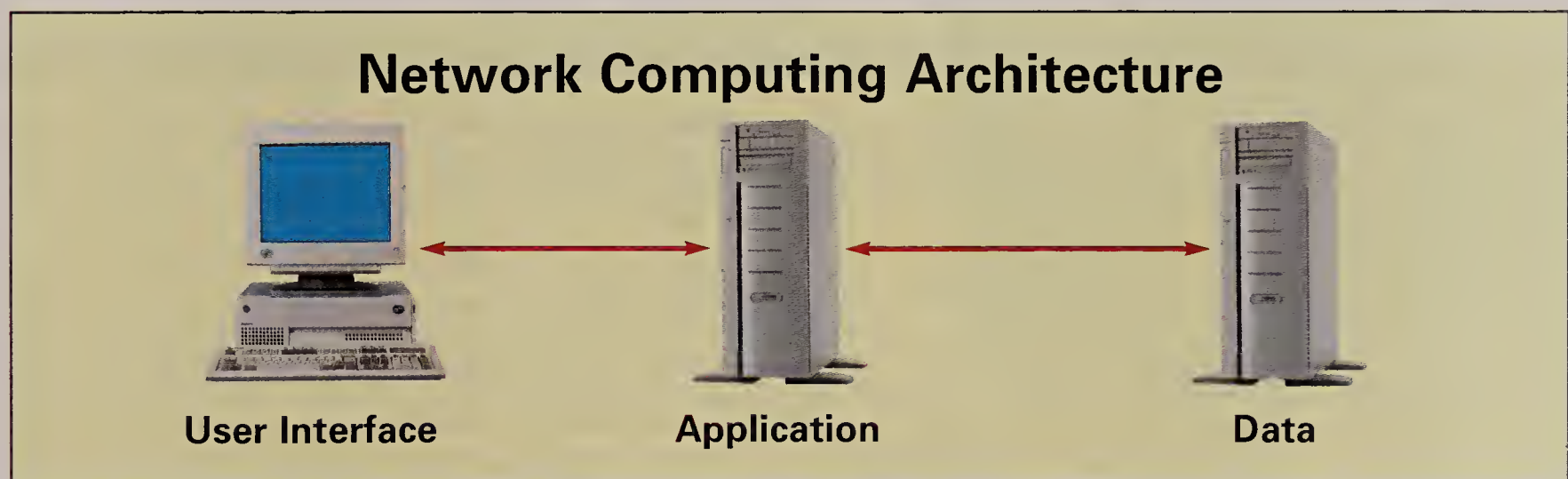
The utility is moving more than 10,000 users from Fischer's EMC2 mail systems to Exchange. "We haven't been extremely helpful to our users in

Get your Enterprise Applications off the Desktop and onto a Server where they belong.

Client/Server architecture places the user interface and application software on the desktop, and the data on the server computer. Unfortunately, managing enterprise applications on desktop PCs is an administrative nightmare.



Moving your applications to servers is the essence of Network Computing Architecture. Server-based applications can dramatically lower administrative costs while improving application performance, reliability and security.



If you want to build server-based applications you need a tool specifically designed to do the job. Oracle's Developer/2000™ allows you to build forms, reports and charts that run on low-cost application servers. These server-based applications are immediately accessible from any Java-enabled client—PC or Network Computer. For more information, including *Byte* magazine's evaluation that gave Developer/2000 its four-star rating, call 1-800-633-1071 ext. 11708 or find us on the Web at <http://www.oracle.com/promotions/corp/d2000.html>

ORACLE®

Enabling the Information Age™

Trial Download Developer/2000 at <http://www.oracle.com/promotions/corp/d2000.html>

REGISTER NOW.

www.oracle.com/openworld

ORACLE OPENWORLD USER AND DEVELOPER CONFERENCE
SEPTEMBER 21 - 26 • LOS ANGELES, CA • 800.304.4646

Going 'virtual' eases pain of managing multiple data marts

► *Single database can fight systems headaches*

By Craig Stedman

DATA WAREHOUSE managers are turning to their own form of virtual reality to reduce the pain of running the multiple data marts demanded by the business units they serve.

Data marts, which store subsets of information about product sales and other topics, may speed up the process of getting critical decision-support data to end users. But the proliferation of data marts can be a hassle for the warehousing staffs that have to keep everything in sync.

Seeking a way out of that trap, some companies are building "virtual data marts" that share a database but are presented to users as separate entities.

The virtual approach "is a lot easier than having to maintain multiple separate universes,"

said Don Stoller, director of decision services at Owens & Minor, Inc. in Glen Allen, Va. The \$3 billion distributor of medical and surgical supplies is combin-



MANUELO PAGANELLI

ing a series of data marts within a single Oracle Corp. database.

Owens & Minor couldn't afford to take the time needed to develop a full data warehouse all at once. But Stoller said building separate data marts would make it harder to guarantee that users

could run queries that go across all of them.

The data marts, covering functions such as sales, inventory and accounts receivable, will be stored in their own tables within the Oracle database, Stoller said.

Owens & Minor's plan is to piece together data marts "almost as building blocks to form an enterprise data warehouse."

— Don Stoller, director of decision services

ler said. End users then will be able to see different views of the information through their desktop query tools.

Hoechst Marion Roussel, Inc., a pharmaceuticals maker in Kansas City, Mo., is following a similar path with its Oracle-

based data warehouse. Everything is being stored in one database, "but it looks just like they were separate data marts" to users, said Coleman Darby, project manager for the company's data warehouse architecture.

Data marts stored on departmental servers hold great appeal for business units that don't want to have to contend for access to a central data warehouse. But scattered data marts can create headaches, ranging from inconsistent data formats and directories to strains on network bandwidth.

Even companies that try to feed data marts from a central warehouse "are finding it a little more difficult than they anticipated," said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston. "And some are wondering whether it's better to just keep it all centralized."

But internal politics may make it hard to resist business unit demands for a stand-alone data mart, Eckerson said.

It is also unclear whether the virtual data mart approach will provide zippy enough query performance as data volumes

spiral upward.

Blue Cross/Blue Shield of Tennessee is giving internal users custom views of its mainframe-based data warehouse. But it had to build a separate data mart for an external client to get good performance, said Frank Brooks, manager of data resource management at the Chattanooga insurer. And even internally, "the way we do it today may not be the right way a year from now," he said. □

COMPUTERWORLD

For these and other related links, point your browser at
www.computerworld.com/links/970804martlinks.html

► What is a Data Mart?
www.dzk.com/dzk/library2.htm

► Building the Data Mart:
<http://vista.hevanet.com/demarest/marc/marts.html>

► Understanding and Implementing Successful Data Marts:
www.aw.com/devpress/titles/18380.html

S H O R T S

Retaining CIOs gets pricier

Chief information officers should be paid \$309,700 per year at large companies and \$260,500 at midsize companies. That is the advice from Sacramento, Calif.-based management consulting firm **Positive Support Review, Inc.** After surveying about 400 companies in California and North Carolina, the consultants said those are the salaries needed to keep CIOs from leaving their jobs. The salaries, which include stock options and bonuses, are up 5.5% from the previous year.

Analysts: Citicorp to trim \$1B

Shares of **Citicorp** shot up more than 5%, to \$130.56, in New York Stock Exchange trading last week after two Wall Street analysts speculated that the New York bank would launch a \$1 billion cost-cutting campaign. The analysts said the consolidation of back-office computer systems, which support the company's global consumer banking practice, will drive the cost savings. A Citicorp spokeswoman wouldn't comment on the reports. Chairman John Reed emphasized the bank's technology-based cost-cutting initiatives in a second-quarter financial report.

Lockheed wins \$95M NYC bid

Despite objections from New York Mayor Rudolph W. Giuliani's office, the board of the city's Metropolitan Transportation Authority voted to award a \$95 million information services contract to **Lockheed Martin Integrated Business Solutions**. The company is a subsidiary of Lockheed Martin Corp., which agreed in 1994 not to bid on city contracts for four years after authorities alleged the company had unfair access to top

decision makers [CW, May 26]. Before the agency approved the contract, the New York Inspector General's office had cleared the Lanham, Md.-based company of charges that it had tried to influence bidding.

Consultant tax rule left intact

A proposal that would have eased tax rules for companies that hire independent computer consultants didn't make it into the final federal budget deal passed last week. The provision would have repealed Section 1706 of the Internal Revenue Code, which makes it possible for a consultant hired through a third party to be classified later as an employee — making the company liable for back taxes and penalties. The proposal was approved by the House of Representatives but not the Senate and didn't survive negotiations held by congressional leaders.

Sun buys appliance technology

Sun Microsystems, Inc. said it has agreed to acquire Diba, Inc., a Menlo Park, Calif.-based technology supplier for information appliances such as Internet-enabled televisions and set-top boxes. Diba will become a Sun business unit, the Consumer Technologies Group. Terms of the deal weren't disclosed.

Firms to link big iron to 'net

Netscape Communications Corp. has assembled a small army of network integrators to help bring the Internet to the mainframe. Seventeen companies will work with Netscape to develop interfaces with mainframe databases. The data can be viewed and manipulated with Netscape Communicator. Players in the deal

include Attachmate Corp., BEA Systems, Inc., Beyond Software, Inc., Information Builders, Inc., NCR Corp., Tibco, Inc., Transarc Corp. and Wall Data, Inc.

Network General buys Cinco

Network General Corp. in Menlo Park, Calif., continued to expand its network management software lineup last week through acquisition. The new target is Cinco Networks, Inc. in Pleasanton, Calif., and the privately held vendor's NetXRay and WebXRay, both Windows-based network analysis tools. The companies expect to close the deal this month for \$27 million.

SHORT TAKES IBM and **SAP AG** are shipping the R/3 database server that runs on the OS/390 mainframe operating system. SAP will resell IBM's DB2 database software directly to R/3 customers. ... **Cisco Systems, Inc.** has announced general availability of 56K bit/sec. modem technology for its high-end AS5200 remote access server. Cisco has standardized on **Rockwell, Inc.**'s K56Flex modem protocol and will support an industry standard through software upgrades. ... A task force of leading groupware vendors will meet this month in Munich, Germany, to hammer out a specification for exchanging electronic calendar information over the Internet. ... **America Online, Inc.** this week will announce the adoption of Network Health software from **Concord Communications, Inc.** in Marlboro, Mass., to help improve service reliability. ... A House subcommittee has endorsed legislation that would examine whether U.S. encryption software companies face foreign competition. The proposed Computer Security Enhancement Act also urges federal agencies to use commercial encryption products instead of a separate government standard.

Introducing The Year 2000 Wait Reduction Program

Get The Lead Out

Get to Year 2000 compliance faster and cheaper with SoftFactory/2000™ from Micro Focus. SoftFactory/2000 uses brains vs. brawn, so it allows your Year 2000 project to run lean and mean. Compare that to other Y2K approaches which rely heavily on slow and expensive manpower.

Nutrition Facts

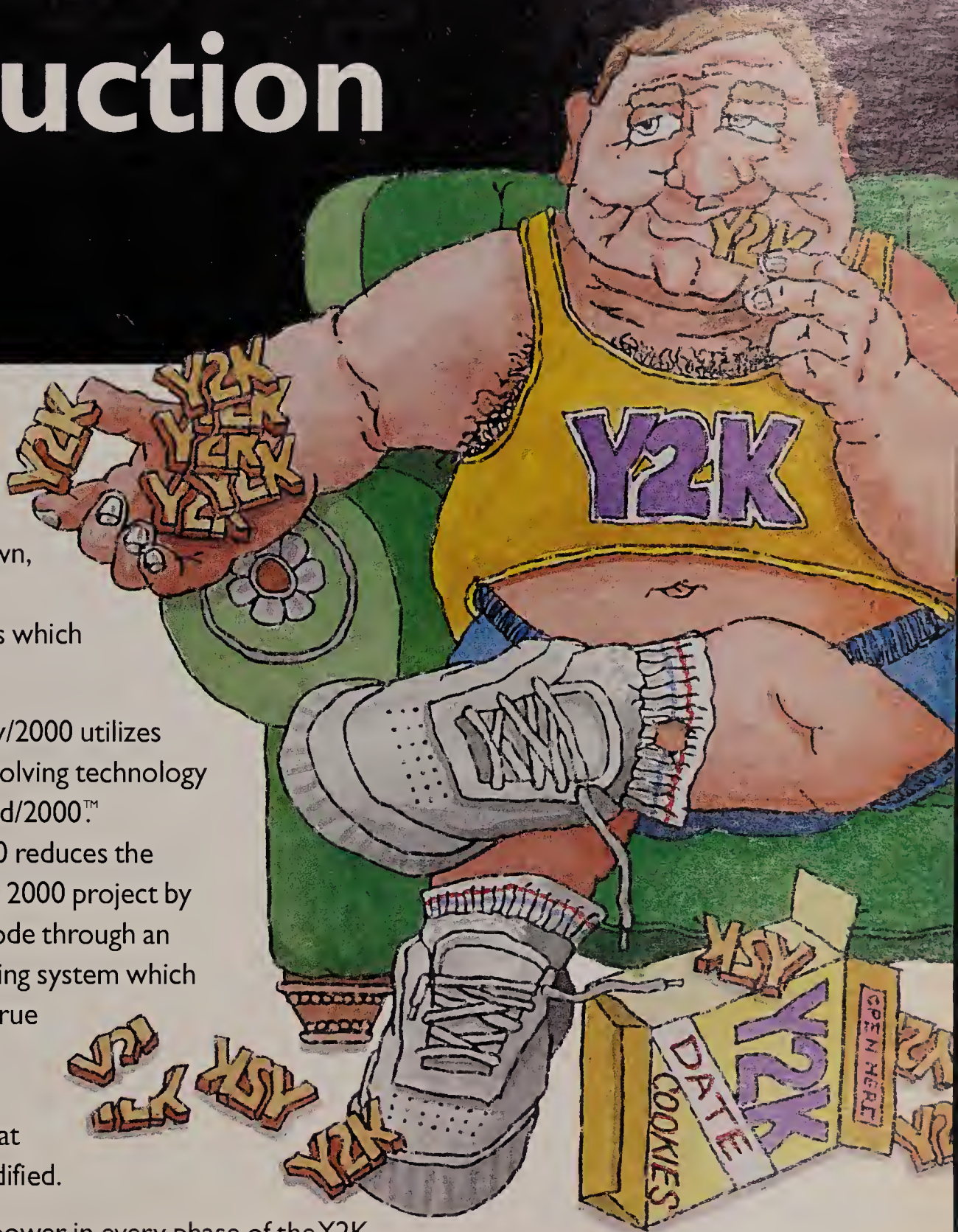
Serving Size: One Y2K Compliance Project

	SoftFactory/2000*
Total Fat	0%
Time to Compliance	Fast
Ingredients	
Technology	85%
Manpower	15%
Pain Relievers	Yes
Cost Savings	10% - 50%
Risk	No

* Based on a Year 2000 project involving hard to digest non-compliant code.

SoftFactory/2000 utilizes Y2K problem-solving technology called SmartFind/2000™. SmartFind/2000 reduces the wait of any Year 2000 project by running your code through an intelligent filtering system which identifies only true date fields and only the date occurrences that need to be modified.

SoftFactory/2000 saves time, money and manpower in every phase of the Y2K life cycle. Call Micro Focus at 1-800-632-6265 and begin your wait loss program today.



M I C R O F O C U S[®]
Transforming The Enterprise



Download your
SoftFactory/2000
Cost Savings Model from
www.microfocus.com/year2000

© Micro Focus 1997. All rights reserved.

The Micro Focus logo, SoftFactory/2000 and SmartFind/2000 are trademarks and Micro Focus is a registered trademark of Micro Focus Limited.
All other trademarks are property of their respective companies.

Speeding up SNA host access

By Bob Wallace

CISCO SYSTEMS, INC. last week said it is preparing a package that will let information systems managers provide faster access to SNA mainframe databases without the need for servers, gateways

and associated maintenance.

Cisco and StarQuest Software, Inc. have developed software that runs on a router and can channel requests for data from TCP/IP desktops over LANs and WANs to SNA-based mainframes with IBM's DB2 databases.

Off-loading this task from the mainframe to the router increases network response time and frees up mainframe cycles that can be better used for other tasks, said the product's first beta tester.

"The router approach offered database access that was 30% to 40% faster than

the server and gateway [approach]," said Manny Aguilera, a networking engineering consultant at Kaiser Permanente Health Plan, Inc. in Walnut Creek, Calif. "And we would save on all the maintenance needed for the many servers and gateways." The gateways and servers are being reassigned to other parts of the network to serve different purposes.

Other Cisco users said they are interested in the package. "This is definitely a major improvement for users looking to easily access applications on legacy systems because it's a clean approach that knocks off all the flavors of access we've had to go through in the past," said Bill Horst, telecommunications manager for New England at the General Services Administration in Boston. "This is utopia for users of DB2 applications."

Got a Burning IT Solution?

Enter the AIM Technology Fall '97 "Hot Iron" Awards — showcasing the hottest new Servers and Workstations running UNIX and Microsoft Windows NT.

Twice a year AIM Technology salutes system manufacturers with awards for Best Performers and Best Price/Performers in multiple price categories. The AIM Hot Iron Awards are based on tests conducted by AIM Technology using their proprietary Server and Workstation benchmarks. The AIM Benchmarks provide consumers with detailed results concerning system performance, total capacity, and throughput across multiple system architectures.

Enter Today!

To enter your system into the AIM Hot Iron Award competition for UNIX systems and Windows NT, or for a free copy of the AIM Price/Performance Guides for UNIX or Windows NT, please contact AIM Technology at (800) 848-8649. Deadline for entries is August 15th!

This year's AIM Hot Iron Awards winners will be highlighted at IT Forum, September 16-18, 1997. With a special awards presentation at New York's famous Rainbow Room on Tuesday evening.

Let AIM Technology help you compare and evaluate Windows NT and UNIX System solutions accurately and effectively ...while taking the heat off!

Cisco's router approach to mainframe access

Pros

- Off-loads access tasks from mainframes
- Eliminates need for servers and gateways
- Cuts maintenance costs

Cons

- Initially for high-end routers
- Pricing not yet disclosed
- Router can become single point of failure

Horst said the TCP/IP approach would "put SNA on the ropes" as a means of accessing DB2 applications and that the plan could have implications for other applications.

The Cisco/StarQuest package reduces the number of processes from four to one that data must go through from the mainframe to the desktop, Aguilera said. "And since we have people already skilled with routers, extra training is not needed. The old way, we had to send staff to school or bring in outside maintenance people, which gets expensive," he said.

Analysts lauded Cisco's first-of-its-kind approach. "It minimizes capital expenditures, reduces latency and the number of devices users need to manage," said John Morency, an analyst at The Registry, Inc., a consultancy in Newton, Mass. "That makes users happy campers."

StarQuest has adapted its software to become a piece of Cisco's Internetwork Operating Software, which runs in all its routers. The deal with Cisco is exclusive. The package initially can be used on Cisco's high-end 7500 router. The vendor is considering supporting it on smaller and less expensive routers.

Cisco and StarQuest said they will make a formal announcement within 60 days. The companies wouldn't reveal the name, pricing, availability or other details of the product. □



AIM Technology
The Performance Experts

Phone: (800) 848-8649
(408) 748-8649
Fax: (408) 748-0161
Internet: <http://www.aim.com>
benchinfo@aim.com

Sponsored by:

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

intel

SCO

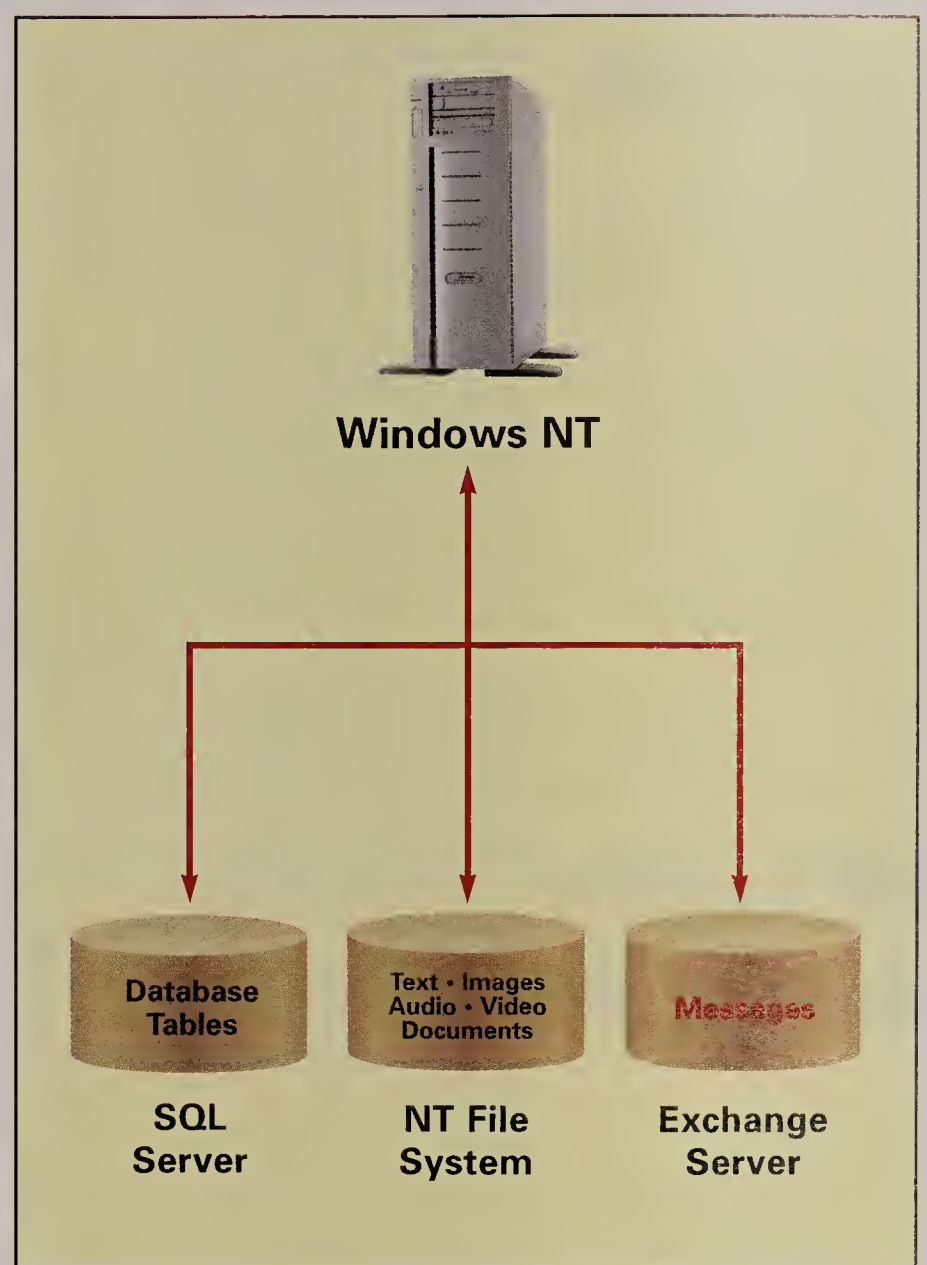
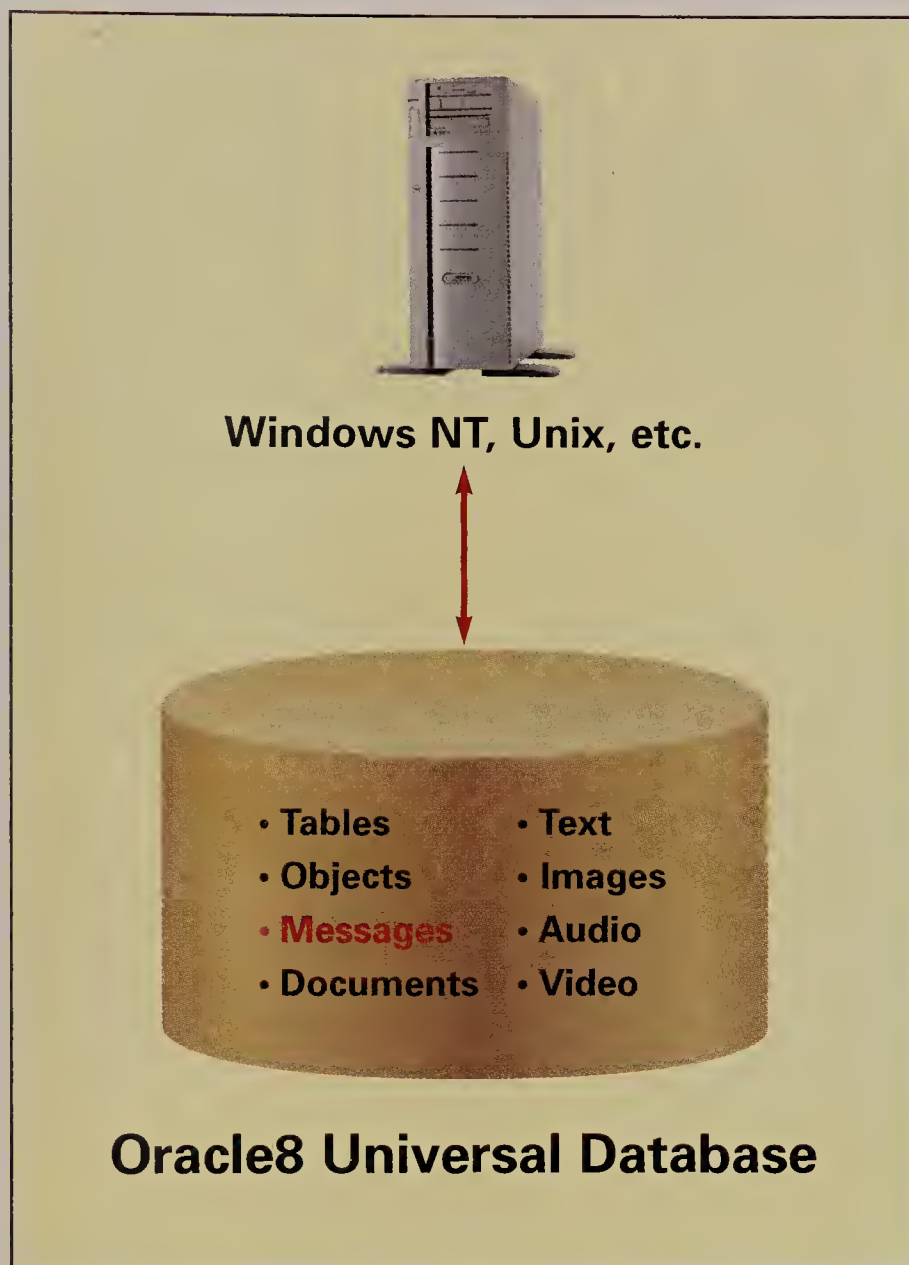
THE EXHIBIT

All companies or product names are trademarks or registered trademarks of their respective holders.

Oracle8 Database Messaging

VS

Microsoft Exchange Email



Oracle8™ database messaging, called InterOffice™, stores email messages in the database. This makes it easy to build modern message-enabled database applications. You use integrated transaction-based workflow to route email messages containing reports, charts, audio, video—even HTML interactive forms—all of which are stored reliably and securely in the database. And InterOffice provides unprecedented economies of scale because it supports thousands of users on a single computer compared to a couple of hundred for Exchange. To learn more about the benefits of integrated database messaging vs. stand-alone, file-based email call Oracle at 1-800-633-1071, ext. 11697, or sign up for a free trial InterOffice account at <http://www.interoffice.net>

ORACLE®
Enabling the Information Age™

REGISTER NOW.

www.oracle.com/openworld

ORACLE OPENWORLD USER AND DEVELOPER CONFERENCE
SEPTEMBER 21 - 26 • LOS ANGELES, CA • 800-354-4444

© 1997 Oracle Corporation. All rights reserved. Oracle is a registered trademark and Oracle8, Oracle InterOffice and Enabling the Information Age are trademarks of Oracle Corporation. All other company and product names are the trademarks of their respective owners.

Lotus bundles Explorer with Notes

► Companies say integration will lower costs, but users doubt benefits

By Barb Cole-Gomolski
and Carol Sliwa

IN A MOVE that surprised many, messaging rivals Lotus Development Corp. and Microsoft Corp. have announced plans to integrate some of their key products.

Under the plan, Lotus will bundle Microsoft's Internet Explorer 4.0 World Wide Web browser with the upcoming Notes 4.6 release later this quarter. And Lotus' flagship groupware system will be made to work with future Microsoft technology, such as Windows 98's integrated browser/Windows interface.

The companies said the integration will result in lower training and administration costs for users.

However, several Lotus users said they doubted the move

would result in tangible benefits.

"This is more of a marketing [deal]," said Jeff Held, a partner at the Center for Technology Enablement at Ernst & Young LLP, which has more than 40,000 Notes seats and has standardized on Microsoft Office. Held noted that Lotus has long supported Microsoft platforms and desktop technologies.

US West, Inc., which uses technology from Lotus, Netscape Communications Corp. and Microsoft, has standardized on Netscape's Navigator and Lotus' Personal Web Navigator.

Motti Goldberg, chief architect at US West, said he is pleased to see his strategic vendors cooperate. But because US West isn't standardized on Internet Explorer, he said he was disappointed that it isn't

Netscape making the deal with Lotus.

Still, a move closer to Microsoft — and its Component Object Model — seem out of step for Lotus, which along with parent IBM, has been one of Java's biggest advocates. In fact, at his Spring/Comdex '97 keynote speech in June, Lotus President Jeff Papows described Java as "the last and best hope for write-once-run-it-anywhere [applications]."

SATISFYING USERS?

Scott Eliot, senior product manager at Lotus, said the company isn't religious about one object model over the other. "Microsoft has tons of users and controls tons of desktops," Eliot said.

He added that last week's announcement is an attempt to satisfy Lotus customers who have bought in to Windows NT and Microsoft's desktop archi-

tection for utilities. "We're watching all developments with high-speed Token Ring, as we're planning to make a decision in another year. We're waiting to get details on pricing and availability."

Token Ring technology — a forgotten stepchild to Ethernet — could have a long and prosperous life, according to Dave Eisenlohr.

"Token Ring will have a place in corporate America as long as efforts are made to keep the

COMING TOGETHER

Tighter integration between Lotus and Microsoft products will mean users can:

- Launch Internet Explorer from a Notes client
- Use Microsoft Word as an E-mail editor in Notes
- Configure Lotus Domino mail users directly from the Windows NT directory

tection. "It would be foolhardy for us to have no solutions for those people," Eliot said.

Analysts had a different take on Lotus' motives. Tom Austin, an analyst at Gartner Group, Inc., said the move was a "clear attempt on the part of Lotus to bludgeon Netscape into breaking out the Navigator component of its Communicator client" for inclusion in the Notes box.

In the past, Lotus has bundled both Internet Explorer and Navigator with Notes. But the Netscape bundling deal fell apart with the June release of Communicator because Communicator has messaging and

groupware features that overlap Notes.

At the Netscape developer's conference in June, Mike Homer, senior vice president of sales and marketing, said Netscape is seriously considering unbundling the browser piece of its Communicator client.

"We want to get the Communicator product out in the marketplace successfully, and we'll consider [unbundling] for future releases," he said.

Homer said the company will rewrite the components of Communicator in Java next year, making it more feasible to detach the browser piece from Communicator. □

IBM's faster Token Ring strategy pleases users

By Bob Wallace

IBM'S PLAN TO bump up Token Ring networks to 128M bit/sec. is eliciting sighs of relief from many large shops that hope to protect heavy investments in the tried-and-true LAN technology.

Speeding up Token Ring would let users sit tight and avoid spending big on new equipment and training for a competing, higher-speed technology such as Ethernet. It would also buy them time to plot a more leisurely and inexpensive migration to higher network speeds.

Faster Token Ring will give the technology a stepping-stone to Gigabit Token Ring, which IBM officials said it will begin offering as an add-on to its high-end switches next year.

FAST AS FAST CAN BE

IBM next month will reveal plans to roll out new adapter cards that take Token Ring from 16M bit/sec. to 128M bit/sec. It will also announce special cards for switches and server enhancements that support higher-speed desktop-to-server con-

nections. All are due by the middle of next year, according to sources briefed by IBM. Pricing hasn't been set.

Of the 10 large Token Ring shops interviewed by *Computerworld*, nine said the plan has

merit and represents a long-awaited sign from IBM of renewed interest in Token Ring. The users said they are hungry for more data to help them analyze the plan.

"We've been putting off moving to Fast Ethernet and have been using enhancements to squeeze the most out of our Token Ring network," said John Arnold, director of information services at Edison Electric Institute, a Washington trade associ-

technology current," said Eisenlohr, vice president of data center operations at Pacific Exchange, Inc., a San Francisco stock exchange.

The company has a 700-node Token Ring network that supports three trading floors. "If companies like IBM make an investment, there'll be a strong market for the technology," Eisenlohr said.

Some users are anxious to hear from independent experts

about the benefits and disadvantages of IBM's plan.

"We need people to clearly spell these out for users, as things are still in the very early stage," said Rich Whittemore, project manager for communications and distributed systems at International Flavor and Fragrances, Inc. in Union Beach, N.J. "We're interested in anything that reduces latency in our networks, but we're curious to see what IBM will be charging for these new adapter cards. If they're more expensive than Fast Ethernet units, users will stay away from them."

A LONG TIME COMING

One user was surprised that enhancements have been so long in the making.

"Token Ring is a robust technology that's been so good for so long," said Bill Botticello, a member of the technical staff at Chubb Life, an insurance company in Concord, N.H. "It's really a shame that all this took so long."


Chubb has 1,000 nodes of Token Ring and plans to stay with it. Higher-speed Token Ring would enable the company to run fatter pipes to its servers, he said.

Faster Token Ring may not have come in time for some users.

"It looks like it's a little too late, as the need for more band-

width has been there a long time, and many users have turned to Ethernet," said Schndra Elgin, a network planner at Household Finance Co. in Prospect Heights, Ill.

"We use Token Ring for access to our mainframes, but our branch office network has roughly 20,000 to 25,000 Ethernet nodes. IBM's general direction is great, but by the time [fast Token Ring] is ready for prime time, many will have moved away from it." □

 **Company links customers to order system via virtual private network. Page 49**

COMPUTERWORLD

For these and other related links, point your browser at www.computerworld.com/links/970804tokenlinks.html

► Token Ring Concepts Page
www.iol.unh.edu/training/tokenring/teach/trconcepts/concepts.html

► Migration Issues and Strategies for Token Ring
www.astral.org/astrlwp5.html

► Using Token Ring Switching to Increase Bandwidth
www.crosscomm.com/white_papers/tr_business/tr_business.htm

Your systems management short list...



1. HP OPENVIEW

just got shorter.

©1997 Hewlett-Packard Company

The newest survey rates HP #1 for customer satisfaction in distributed systems management.

In a recent Computerworld* survey which rated satisfaction with distributed systems management vendors, Computer Associates and IBM/Tivoli didn't quite make the cut. The first choice: HP OpenView, which scored tops in every category including Overall Satisfaction, Quality, Cost of Ownership, Comfort with Vendor, and Service and Support.

With this latest recognition, HP OpenView has extended its award-winning leadership in network management to become the customer-preferred

solution for system management as well.

These IT professionals surveyed already know that HP OpenView provides everything needed to ensure that mission-critical IT services are up and running — a responsibility that's definitely top on their lists. HP



HP OPENVIEW

OpenView gives the IT staff immediate access to the status and performance of their business-critical applications as well as the complete computing infrastructure. As a result, HP OpenView assures the high availability critical to the success of any business.

So if you've been entrusted with managing crucial information services, choosing the right partner is now a bit simpler. HP OpenView...a cut above the rest.

*April 21, 1997

Unix grows at high end; NT takes over at low end

Year 2000, data warehousing top Unix areas

By Jaikumar Vijayan

FOR UNIX, the best may be yet to come.

The year 2000 issue and the growing demand for servers to

be Unix" over the next few years, said Jean Bozman, an analyst at International Data Corp. (IDC) in Mountain View, Calif.

Although Aberdeen's figures are the most optimistic yet for

to \$9 billion in 2000, according to Aberdeen.

But issues relating to scalability, reliability and labor availability mean that most of that growth will be restricted to the network and low-end application server market.

The Unix surge will begin when mainframe shops start giving up year 2000 repair efforts and simply start moving some smaller applications to Unix servers, analysts said.

"We estimate that 80% of mainframe repair projects are simply not going to make it on time," Logan said.

Palm Beach County, Fla., for instance, is moving some large applications off its IBM mainframe to Unix servers from Sun Microsystems, Inc. at least partly because of year 2000 issues, said Michael Hecht, a senior server administrator for the county's information systems department.

"Rather than invest a great deal of money in fixing all of our applications, we made the decision to move where possible to Unix," he said.

DATA WAREHOUSE NEEDS

But the year 2000 problem won't be the only factor that pushes Unix sales in the next few years, some observers said.

"We have seen a sharp increase in the number of users looking to [dramatically] increase the size of their data warehouses," said Brian Richardson, a director at Meta Group, Inc. in Stamford, Conn. "That's going to fuel a significant growth in the high end of the server market."

Enterprise servers such as IBM's SP2, Sun's UltraSPARC boxes and Hewlett-Packard Co.'s V-Class systems routinely come with technology optimized to handle applications such as Oracle Corp.'s databases or SAP AG's R/3 resource planning software. That includes features such as very high-scalability, high-availability clustering and mainframe-like storage capacities.

"A lot of people are using year 2000 as an excuse to move all their applications away from their mainframes" to Unix, said David Krauthamer, MIS manager at Parker Hannifin Corp. in Rohnert Park, Calif. "But the real value of Unix is going to be in its use as database servers," with NT running most of the front-end applications. □

Windows NT's flexibility helps it gain ground in software automation systems

By Randy Weston

ALTHOUGH UNIX is still the market leader on the shop floor, Microsoft Corp.'s Windows NT is catching up fast, according to a new study.

Advanced Manufacturing Research, Inc. in Boston reports that because of NT's flexibility, manufacturers are adopting it at a furious pace for running plant operation software (see chart).

"The NT operating system is better equipped to manage the market's changing software needs," said Bill Swanton, an analyst at Advanced Manufacturing.

"Last year, Unix dominated with a 28% market share, while NT trailed at 20%," Swanton said. "By 2001, Windows NT will surpass Unix in market share and will clearly emerge as the operating system of choice."

Swanton said manufacturers are increasingly looking at less expensive software automation systems, such as plant control systems from The Foxboro Co. in Foxboro, Mass., and Honeywell, Inc. in Minneapolis.

But the technology that drives those control systems is advancing rapidly, and manufacturers are finding NT a much easier platform to work with when changing software often.

Colorado Springs Utility uses Foxboro's control system to run three of its water treatment plants in the central Colorado city. The two large plants are on

a Unix platform and the smaller one runs on NT, but one of the larger plants will soon run Unix and NT side by side.

Water treatment supervisor Robert Doiel said NT is more flexible. But for some uses, Unix is much more robust and

"Last year, Unix dominated with a 28% market share, while NT trailed at 20%. By 2001, Windows NT will surpass Unix in market share and will clearly emerge as the operating system of choice."

**— Bill Swanton,
Advanced Manufacturing Research**

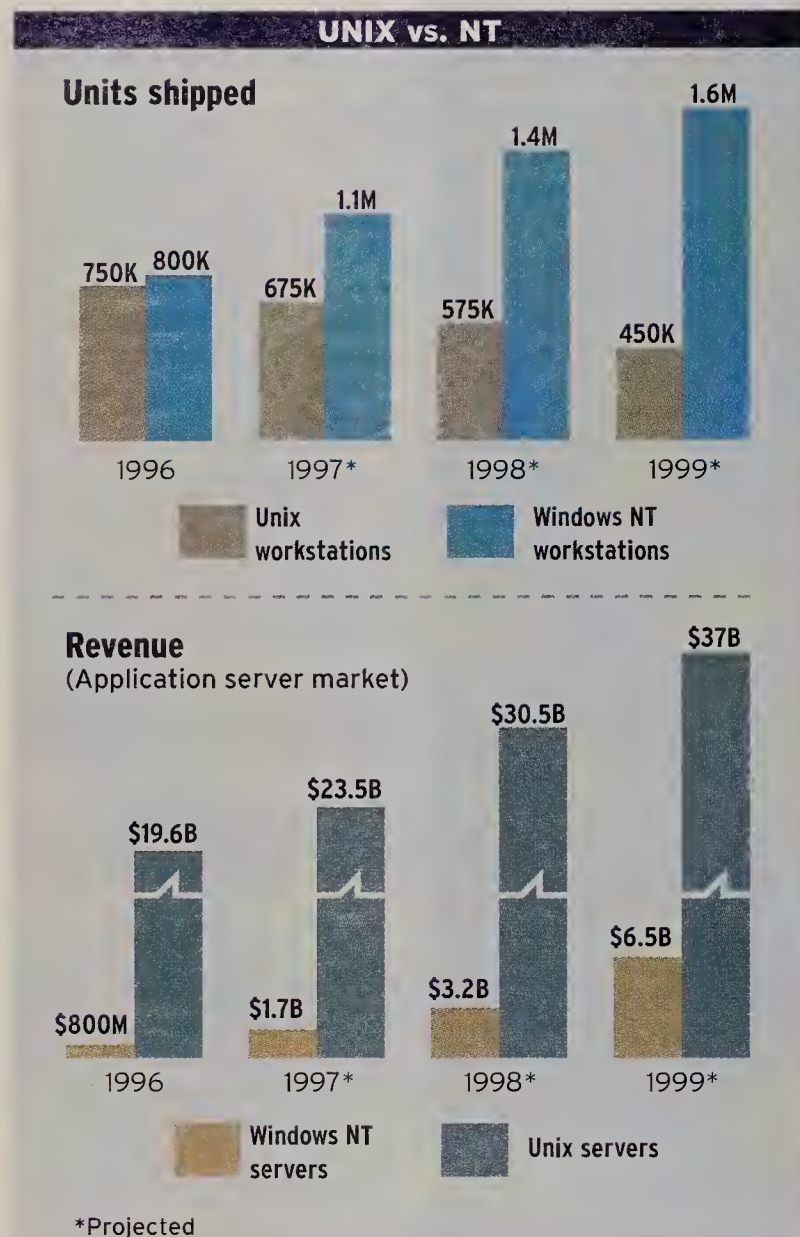
will always have a place at the plant, he said.

"We are looking at running some Internet-based control applications here," Doiel said. "For that, the Unix platform is the way to go. It's a lot more reliable for running Internet applications."

Swanton agreed but said even the use of Unix will fade as more historically mainframe shops move to client/server and avoid Unix in the process.

"Unix is becoming irrelevant other than a host for Java applications," he said. "But we have noticed people who missed the Unix revolution are bypassing it altogether now and going straight to NT. It's a more natural progression since NT has more in common with VAXes than Unix does." □

& Unix-based Informix users start to heed Windows NT call. Page 55



Source: Aberdeen Group, Inc., Boston

run large data warehouse applications will power a steep increase in high-end Unix server growth over the next few years.

Unix will continue to take a hammering from NT in the low-end server and workstation space. But in the market for database and large application servers, Unix will grow from sales of \$20 billion last year to \$40 billion in 2000, according to an upcoming report from Aberdeen Group, Inc. in Boston.

For users, the predicted boom will mean additional features and capabilities, as Unix vendors begin building up their boxes to handle more data-center and mainframe-class applications, analysts said.

"If you are an IT manager looking to replace mainframe applications, the first choice will

Unix growth, research firms such as IDC, Gartner Group, Inc. and Forrester Research, Inc. have predicted that at the high end at least, Unix will continue a strong showing for the next few years.

"Unix vendors have tended to treat the market as a price and commodity market, but that's going to change" as they go for a larger slice of the data center pie, said Aberdeen President John Logan. "There is going to be less price competition going forward" and more of a focus on value-added features and services, he said.

Meanwhile, sales of Windows NT servers will grow at an even more spectacular rate over the next few years in terms of unit volume and percentage growth — from \$800 million last year

1996 license revenue by operating system:

Unix	\$199M
Windows NT (multiuser)	\$144M
Windows 95, Windows NT (single user)	\$142M
OpenVMS	\$111M
MS-DOS/Windows 3.x	\$82M
OS/400	\$7M
Other	\$29M

Source: Advanced Manufacturing Research, Inc., Boston

Automatic Product International
 ABB Control Inc. • Vecta
 Cold Point • Fleetwood
 Kleen Brite Labs, Inc. •
 North American Tool
 Oldforge Tools • Wel
 BLH Electronics, Inc.
 Carolina Steel & Wire
 Surftran • Wil-Rich
 New Berlin Plant
 United Titanium
 Homecrest Inc.
 Dryvit Systems
 Geerpres Inc.



Manufacturers worldwide trust MAPICS.

Community of Vision

Investment in any technology today means that you not only buy a company's product. You also buy into a company's vision. A corporate vision of evolution, not revolution, made MAPICS the most utilized ERP software on the planet. In more than 60 countries, manufacturers in virtually every place commerce is conducted, trust MAPICS for continuous technological advancement and easy-to-manage, graceful ERP software migration. MAPICS: a vision proven by nearly 20 years of performance versus competing, sometimes confusing, technological promises. The truth is out there.



Evolution, not revolution

Compare MAPICS. For facts, figures and success stories relative to your industry and business need, call 1-800-3mapics or access Internet site <http://www.mapics.com>

Cards to be ready before infrastructure

By Sharon Gaudin

ANALYSTS PREDICT it will be five to eight years before smart cards really catch on in the U.S. The holdup isn't expected to be the Java technology but the time it will take to update more mundane devices, such as soda machines, pay telephones and toll-booths.

Visa executives said they will have millions of Java-based chip cards issued by the end of next year. But industry observers warned that many devices still won't be able to use them.

NEW INFRASTRUCTURE

"The problem is getting people to cooperate," said Octavio Marrenzi, research director at Meridien Research, Inc., a Needham, Mass.-based financial technology research firm.

"A single bank cannot go and introduce smart cards throughout the market. It's about building infrastructure. It's getting new phones that will take the cards, new vending machines,



JOHN HARDIN

getting new equipment into retail stores," he said.

Philip Yen, senior vice president for Visa's chip platform, said negotiations are already under way with various manufac-

turers to begin producing the needed equipment. "I think customers will be able to start using them in the second half of 1998," he said.

Marrenzi predicted it would be

Visa customers should be able to start using smart cards in the second half of 1998.

— Philip Yen,
Visa International

at least five years before the cards can be commonly used.

Cynthia Weaver, an analyst at the Global Smart Card Advisory Service, a cooperative program of The Tower Group and Centum Consultancy, said the U.S. will continue to lag behind Europe in its adoption of smart-card technology.

"The U.S. will naturally be much slower to accept the technology because we have such a widespread magnetic strip infrastructure," she said.

"Other countries are better able to leapfrog over the U.S. because the strip isn't as widely used over there," Weaver explained. □

Permanent record

Buying a soda at the store down the street. Paying your tolls in New York. Accessing a network computer at work.

The potential downside to being able to do so much with your smart card is that someone, somewhere just might be able to keep much better records about where you spend your time and how you spend your money. Consumers may be quick to worry that Big Brother may be looking over their monthly bills and getting a better description of their lives.

Well, that may not be so easy to do, said Philip Yen, senior vice president for Visa's chip platform.

"We are very well aware of confidentiality and security issues," Yen said. "It's no different from people being able to collect information from different places. We clear the transaction and pay the merchant. After that, we don't record it. So it would be impossible to track people."

Yen conceded that individual companies, such as retailers and telephone utilities, will be better able to keep records if they want to.

— Sharon Gaudin

Visa leads charge toward Java-enabled chip cards

CONTINUED FROM PAGE 1

these applications and new functions on the cards. And our customers want multiple functions." Yen said Visa's 21,000 member banks approved the move to Java.

Novus Services, Inc.'s Discover Card and American Express Co. are getting into the smart-card arena, too, but executives from those companies wouldn't say if they plan to use Java technology.

MasterCard International, Inc. is working with a group of other companies, such as AT&T Corp., First Chicago NBD Corp. and Wells Fargo & Co., to establish a new electronic-cash system. But analysts said the system should be compatible with Java.

JAVA JUNKIE

"We absolutely support the Java initiative," said Michael Love, vice president of the smart-card division of Charlotte, N.C.-based First Union National Bank, the fourth-largest issuer of debit cards in the U.S. "Smart cards play a broader role in the banking spectrum than just retail electronic purse cards. Java technology will allow us to pursue other high-tech applica-

tions, particularly in terms of offering digital authentication and higher security on the Internet."

By the end of next year, Visa expects to have 2 million to 3 million Java-based smart cards in use in the U.S., Yen said.

By 2001, the goal is to have about 200 million chip cards

enable the card for multiple uses, including the following:

- Transferring cash from an automated teller machine to the card, thus transforming it into an electronic purse. Instead of digging around for change, consumers could use the card at pay telephones and vending machines — and the charge would

ings, rooms or computers.

Consumers still will be able to buy items on credit, receive cash advances and debit purchases from their checking accounts.

Michael Killen, president of Killen & Associates, Inc., an analyst firm in Palo Alto, Calif., said he could do much more with a Java card than with a traditional credit card. "I could go to a telephone, stick in my card, punch in my ID number and password, dial Charles Schwab and buy \$100,000 worth of Microsoft stock. The computer system would check out my card and determine that I'm Michael Killen and would do extensive authentication of who I am."

"Java and smart cards have a lot of potential to enable us to offer more customized service to our customers," said Susan Baumann, vice president and manager of San Francisco-based BankAmerica Corp.'s smart-card group. "In our pilot programs, customers have liked the convenience of the features, and merchants have appreciated the faster transactions."

Bank of America has been pilot-testing smart cards with 4,000 of its employees for the past two years. Visa also has

scheduled pilot tests at several locations across the country.

Yen said Java-based smart cards differ from other chip cards, which are generally built with assembly code or C++. Today, most card manufacturers have their own proprietary platforms. So if Visa wanted to add a feature to its cards, it would have to write a separate application for each platform, recall people's cards and then redistribute new ones with the added application. □

Visa's smart card pilot in Atlanta last year

- Number of cards issued: 2 million
- Number of terminals that accepted them: 2,700
- Number of merchants involved: 1,500
- Value of transactions: \$1.1 million
- Number of transactions made: 200,000

Source: Meridien Research, Inc., Needham, Mass.

circulating worldwide. Nearly all will be Java-based, Yen said. Today, Visa has 600 million regular cards issued around the globe. Smart cards based on other platforms are fairly popular in Europe but have yet to catch on in the U.S. (see story above).

The chip will include a Java Virtual Machine, to interpret the Java code to each different machine, and a processor. That will

be subtracted from the amount that was transferred into the card (see story at top right).

- A form of payment at tollbooths or mass transit terminals.
- Enhancing security in electronic commerce. The card can digitally identify its user, automatically loading in digital signatures and encryption to further secure online transactions.
- Controlling access to build-

@ COMPUTERWORLD

For links on smart cards, point your browser at
www.computerworld.com/links/970331/smartlinks.html.

Information on Java cards can be found at these URLs:

► The Java Card API:
www.java.sun.com/products/commerce/doc.javacard.ps

► The Java Card API FAQ:
www.javasoft.com/marketing/collateral/commerce_faq.html

Laptop outlook: Less weight, more features

By Kim Girard

THIS FALL'S laptop lineup will feature the slim look on some models, but others will show off bulked-up power and management features.

Higher-end notebooks to debut in September will boast 14-in. screens, Intel Corp. 200-MHz processors and 5G-byte hard drives, analysts said. For example, IBM's 770 series will be built to order and will have sensors that monitor heat inside the computer.

Compaq Computer Corp., IBM and NEC Corp. are leading the charge toward slimmed-down laptops.

Compaq last week began delivering 6-pound notebooks that are 1.5-in. thick yet have full-size screens and CD-ROM drives. Like IBM's ThinkPad 560, the Armada 7330T and 7350MT offer standard-size screens and keyboards but are lighter than competing machines. Prices will run from \$4,399 to \$4,899.

Compaq's 7330T and 7350MT slimline notebooks

Memory:	16M to 32M bytes
Display:	12.1-in. screen supported by a 2M-byte video memory
Hard drive:	Removable 2.1G-byte drive and a second expansion bay for a CD-ROM drive, a disk drive or second hard drive
Modem:	33.6K bit/sec. standard with promised software upgrade to 56K bit/sec.

Other vendors playing catch-up will have to retain features that users expect — CD-ROMs, hefty hard drives and floppy drives — while whittling away extra weight and keeping prices down.

For Asmar Madyun, a technical manager at AT&T Corp. in Berkeley, N.J., weight is a secondary issue.

He said his Compaq and Toshiba America Information Systems, Inc. users want faster machines and longer-lasting batteries, and he wants more-rugged machines. "The doors still tend to break open and crack in the corner of the chassis," he said.

"I'd like to see [notebooks become] lighter, more affordable and include a battery that works," said Mike Murray, director of national accounts at Lanier Worldwide in Atlanta. The company uses Compaq's LTE 5000 line of notebooks. Murray said his battery dies after 40 minutes.

Francis Nievers, a systems analyst at Sun Co. in Philadelphia, buys Compaq and Toshiba notebooks and plans to upgrade them by year's end. He said his

sales force is less concerned with weight than with a glare-free screen.

Ken Dulaney, an analyst at Gartner Group, Inc., a Stamford, Conn.-based consultancy, said the slimline market is quickly moving to lighter machines that have larger screens, which enables man-

ufacturers to spread out components.

Information systems departments are cooperating by compromising on external floppy disks and removable components that enable a thinner design. And half-inch hard disks offer increasingly greater capacity.

"Putting top-notch notebook performance in a 2-pound package is well within reach," Dulaney said.

Fred Winograd, chief technologist at Montgomery Securities, Inc. in San Francisco, said he is content with Digital Equipment Corp.'s Ultra, which weighs 4.1 pounds without its CD-ROM. "I look at some of the notebooks that are out there, and they're over 7 pounds," he said. □

What happened to your database today?



Introducing ERwin 3.0. The only modeling tool that helps you through the daily twists and turns of database development.

Sure, any modeling tool can help with upfront design. But what happens when your database changes? Will your models become outdated and useless?

Not with Logic Works ERwin® 3.0's breakthrough Complete-Compare technology. Need to update your database? Just change your ERwin model. Complete-Compare automatically detects differences and generates your alter scripts.

Need to update your model? Complete-Compare instantly puts it back in sync with your database. You save long hours of analysis, scripting and updating. And use your model to build and maintain your database through every stage of application development.

Post yourself a note. When your database depends on you, it's got to be ERwin. Call 1-800-78-ERWIN, or visit www.logicworks.com today. Outside the U.S., call (609) 514-1177.



▲ Complete-Compare keeps your model and database synchronized

logic
works®

Logic Works and ERwin are registered trademarks of Logic Works Corporation. All other names are trademarks of their respective owners.

transaction no. 0079114568
LOGGED SECURED AUTHORIZED BILLED

THERE ARE TWO THINGS BERND BETSCHMANN, SWISS BANKER, CANNOT DO WITHOUT.





ONE IS HIS MORNING BATH.

THE OTHER IS HIS WINDOWS NT[®] SERVER.

When Swiss bankers make Internet transactions, they do it on a Tandem[®] Windows NT Server-based system. And they do it with the security that Tandem brings in handling 90% of the world's stock transactions, 80% of all ATM transactions, 66% of all credit card validations, and two-thirds of all 911 calls in the United States. Tandem's cost-effective solutions for modular growth in the areas of finance, retail, telecommunications, insurance and elsewhere now bring business-critical reliability to every customer, for every transaction they make. Contact us at www.tandem.com for more information. Or call 1-800-NONSTOP, ext. 8003 to receive our latest information pack which includes the new Windows NT Enterprise Management Sampler CD.

Every second, every transaction, every customer counts.

 **TANDEM.**
reliability, no limits.

Security vendors team on integration

► Firewall vendors missing from SecureONE agreement

By Sharon Machlis

FOUR BIG GUNS in the security industry have joined forces to make it easier for their products to work together. But

there were some noticeable absences in the SecureONE framework, such as representation from a firewall vendor and a single approach for managing the various components.

SecureONE will include a set of application programming interfaces (API) compatible with software from all four vendors: RSA Data Security, Inc., Security Dynamics Technologies, Inc., VeriSign, Inc. and McAfee Associates, Inc.

Still under development, the API is ex-

pected to be included in encryption tool kits from RSA, the market leader in commercial cryptography, in the fourth quarter of this year. Applications that use the new API aren't expected before early next year, said Jim Bidzos, president of RSA.

SecureONE also involves several cross-licensing arrangements among the products for encryption, user authentication, digital certificates and antivirus scanning. For example, McAfee could build

IDC's 5th Annual

PC MARKET OUTLOOK

IDC's 1997 PC Market Outlook is a one-day conference providing comprehensive market and technology forecasts, fresh primary research on important customer segments, access to IDC's expert analysts from around the globe, and a forum for discussion about the topics that are important to you.

SESSION TOPICS:

- Worldwide PC Market Outlook
- Desktop OS Outlook
- Desktop Market Outlook
- Server Market Outlook
- Mobile Market Outlook
- Information Appliances: Toast or Triumph for Tomorrow
- Channel Impacts
- The Home Market: What Can It Deliver?
- The Great NC Debate



WHO SHOULD ATTEND?

- PC and peripheral hardware manufacturers
- Software vendors
- Marketing/advertising executives
- Channel partners
- IS professionals
- Financial analysts
- Semiconductor suppliers

For More Information Contact Dara Queen at:

Phone: 1-800-343-4952 • Fax: 508-935-4015 • Email: dqueen@idcresearch.com

Visit our web site to register & view a detailed agenda

<http://www.idcresearch.com/pcmo.htm>

AN  **IDC** EVENT CO-SPONSORED BY

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

**INFO
WORLD**

mc
MARKETING COMPUTERS

PC WORLD

Hotel Sofitel ~ Redwood City, CA ~ September 16, 1997

SecureONE cross-licensing highlights

- McAfee could build RSA digital signatures into antivirus software
- Security Dynamics could bundle McAfee's VirusScan with RSA SecurPC
- McAfee could support Security Dynamics' user authentication tokens, smart cards and other products

RSA digital signature support into its antivirus software (see chart).

Last week's announcement didn't include a unified way to manage the various security components across an enterprise, something that many harried systems administrators said would help trim staff time needed to oversee various network components. And no firewall vendor is currently involved in the effort, although officials from the alliance said their standard would be open to other interested vendors.

PRO-ALLIANCE

Several users welcomed the alliance. "I think it's going to be very useful," said Christopher Logan, CEO at San Francisco-based Fabrik Communications, Inc., which offers E-mail services to firms.

Companies need to move their security to "the boundary of an organization" for it to be effective in protecting crucial data and preventing costly, time-consuming virus attacks, Logan said. And different security components need to be tightly integrated, such as making sure encrypted E-mail can still be scanned for viruses.

A common API should make it easier for developers to incorporate virus scanning into encrypted data. That will allow messages to be checked as they enter a network, instead of after they are decoded on a desktop.

"I think this is very helpful because it enhances the security of our network environment," said Bennie Lau, a PC/LAN/WAN analyst at Wells Fargo & Co. in San Francisco.

Symantec Corp. in Santa Monica, Calif., hasn't seen technical specifications for the API and couldn't comment, said Bob Pettit, director of product management. "We have had an API for anti-virus for four or five years," he said. "There really is a large number of security vendors." Customers want their vendors to have good relationships with many companies in the industry, not just a few, he said. □

On the date on the left,
we solved the problem on the right.



So how are you going to fix your Year 2000 problem? Why not ask the company that first anticipated this glitch ten years ago. Well before the rest of the industry even woke up to the coming crisis.

At PeopleSoft, we have the proven solution for the Year 2000 — and an even smarter way to prepare your organization for 2001, by migrating your legacy system to our advanced enterprise business applications. In fact, we'll have you up and running with time to spare. The long-term net? A better ROI, improved access to mission-critical information, even support for the coming euro currency. Problem solved — again.

PeopleSoft Enterprise Applications. They'll keep your business ahead of the curve for the Year 2000 and beyond. Visit us at www.peoplesoft.com/year2000, or for a copy of *The Year 2000—An Executive Handbook*, call 888-773-8277.



Enterprise business applications for your organization.

Your choice.

This simple chart only begins to explain the enormous difference between Unicenter® and IBM/Tivoli TME 10.

What clients want today are complete solutions not just software initiatives like SAA, OfficeVision and SystemView. The questions are, do you want to bet your career on IBM's view of the future? Can you afford to wait? And how can you have confidence in a solution that is so IBM-centric and biased?

Those are just a few reasons why thousands of clients prefer Unicenter. It's the industry standard for network and systems management. Today, more than 93% of the Fortune 500 and thousands of small to medium-size businesses trust CA for enterprise management.

Unlike TME 10, Unicenter TNG supports every major hardware platform and operating system. It's open, scalable, extensible and vendor-neutral. And with Unicenter TNG's powerful new

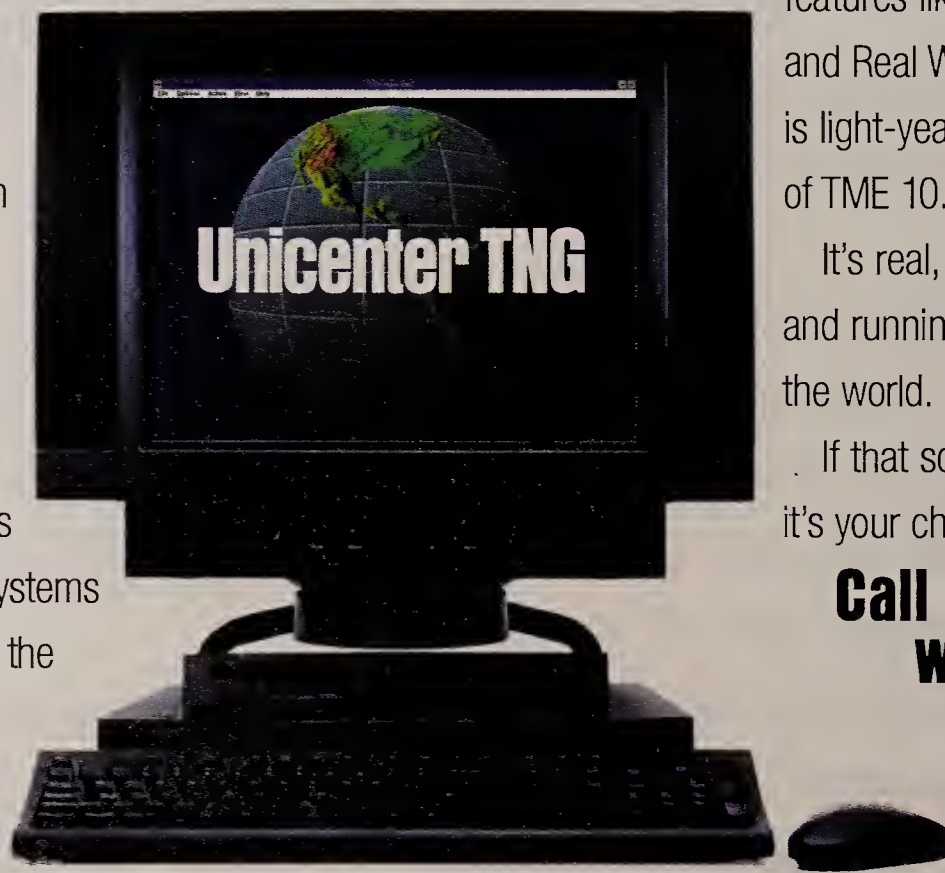
features like advanced agent technology and Real World Interface™, Unicenter TNG is light-years ahead of TME 10.

**SHIPPING
TODAY**

It's real, it's mission-critical and it's up and running in thousands of sites around the world.

If that sounds good to you, remember, it's your choice.

Call 1-888-864-2368
www.cai.com



**COMPUTER[®]
ASSOCIATES**
Software superior by design.

Unicenter[®] TNG[™]

©1997 Computer Associates International, Inc., Islandia, NY 11788-7000. All other product names referenced herein are trademarks of their respective companies. Information based on publicly available information as of 3/1/97.

Unicenter®

IBM/Tivoli TME 10

Features

Business Process Views™



Real World Interface



Fully Integrated Management Functions



Fully Integrated Network Management



Policy-Based Management for All Functions



Manages Over 30 Platforms



Also Manages AIX, AS/400, Open VMS and MVS



Open and Interoperable



Published APIs for Over 14 Management Functions



Object-Oriented Enterprise Management Schema



Intelligent, Autonomous and Lightweight Agents



Built-In Security



Single Sign-On



Network Security Including the Internet and Intranets



Monitoring and Event Management



Support for SNMP and HMMP/HMMS Standards



Virus Protection



Desktop-to-Host Storage Management



Software Delivery



Integrated Service Desk



Workload Management



Complete Job Flow Process Visualization



Extensive Web Server Management



Output Management



Resource Accounting



Integrated Support for MVS Management



Supports DECnet, TCP/IP, SNA and IPX/SPX



Wizards for Easy Customization



Super CIOs are young, creative and ambitious

CONTINUED FROM PAGE 1

well-rounded manager who can easily fit in with other boardroom executives.

"It's a person you'd want to hang out with on a Saturday night," said Don Pizzi, managing principal at Mark Adams Associates, an information systems executive search firm in Westfield, N.J.

Murphy, for example, is a music collector who spends his off-hours playing saxophone and competitive basketball. At his last job, he headed Avis, Inc.'s WizCom group, which sells software and systems to other car rental companies. When he got the call from Bristol, he had four other job offers.

And Murphy is ambitious, with an eye toward becoming a CEO. "As a motivated businessperson, that's the ultimate goal. I don't see any reason why the CIO can't be a stepping-off point to CEO," he said.

"With a lot of CIOs I interview today, you couldn't tell that they were techies if your life depended on it. Their real strength is that they come off like general managers," said Jim McClure, a Boston-based vice president at executive recruiting firm Korn/Ferry International.

But the right mix of business, interpersonal, leadership and technology skills doesn't come cheap.

Recruiters said CIO salaries and bonuses are at an all-time



AlliedSignal's Eric Singleton:

"It's not just about systems and infrastructure"

high, and climbing even higher, as companies bid against one another for the best and the brightest in a limited labor pool. The new-breed CIOs are getting compensation packages worth \$600,000 to nearly \$2 million per year — well above the average of about \$100,000 per year for IS chiefs.

"It's crazy. I've seen things I never imagined I'd see. People [getting] counteroffers and 50%

to 60% increases are not uncommon," said Jeff Leon, managing director of the IS practice at Russell Reynolds Associates, an executive recruiting firm in New York.

One CIO went to his boss to resign from his \$175,000-per-year job and take a new CIO post that paid \$250,000 per year.

"Instead, his employer upped his base pay to \$350,000 and gave him a guaranteed bonus and a two-year contract and a ton more stock options than he already had," Leon said.

But companies also expect much more from CIOs than ever before. CIOs are responsible for increasing shareholder value and setting a company's strategic technology direction. That means helping increase sales, reduce costs or develop products and services.

For example, Mike Hernon, 42, is the city of Boston's CIO and the main catalyst behind a high-tech incubator initiative known as Techctr@Boston. Designed to attract multimedia start-up companies to the city, the center provides flexible leasing arrangements, shared computer networks and office equipment to young Internet-related businesses.

Hernon, who is an avid sailor and holds an advanced degree in psychology, worked for nine months with venture capitalists, real estate developers and Internet entrepreneurs to create the center. The economic benefits for the city include increases in jobs and the tax base.

Hernon said the economic-development role is entirely appropriate for a CIO. "The IS function is no longer administrative support. It really is a strategic position. A lot of it is marketing your vision," he said.

NO TECHNO TALK

At Avon Products, Inc., Spencer J. McIlmurray never mentions "systems" or "technology" when talking about his job as vice president of technology services at the \$4 billion global cosmetics giant.

Instead, the 43-year-old former management consultant and Gartner Group, Inc. analyst likens himself to a catcher in a baseball game.

"You have a full view of everything, and you're in a very strong position to influence how the game is played," McIlmurray said. Diplomacy, negotiation and leadership skills are critical, he said.

For example, Avon does business in 128 countries, so McIlmurray's role is that of diplo-



The city of Boston's CIO Mike Hernon says the IS function involves "marketing your vision"

mat. He negotiates for services with different national telecommunications authorities and forges alliances with suppliers and distributors around the world.

"Negotiation skills are exceptionally important," said Denis J. O'Leary, The Chase Manhattan Bank Corp.'s 40-year-old CIO, who presided over the bank's merger with Chemical Banking Corp. last summer. "The percentage of time spent on pure technology is low. A lot more time is spent around change management and leading people to decide to make the changes."

But moving up the IS ranks

with purely technical skills won't be enough to land the high-paying executive positions.

"Now as a CIO, you have to be as good as the marketing VP, logistics VP and the finance person. The days of the person inching forward year after year with strong technical skills alone is gone, big-time," said Eric Singleton, CIO at AlliedSignal, Inc.'s Automotive Aftermarket Division in Rumford, R.I.

At 35, Singleton heads IS for AlliedSignal's only consumer business, which sells antifreeze and other automotive goods through retailers and, eventually, directly to consumers via an electronic commerce system under construction.

THE VISION THING

Already Singleton has proved adept at marketing his vision. In his previous post at another AlliedSignal unit, he helped develop and roll out a set of shrink-wrapped software tools to more than 85,000 users. The package, which cost \$500,000 to develop, automated the company's quality process by tracking the activities of several hundred autonomous project teams spread out over three divisions and 43 countries.

Now, Singleton, who spends his weekends crewing on an America's Cup racing boat, said he hopes to shrink the time it takes to get products to market, either by applying available IS tools or perhaps by creating an entirely new tool.

"It's not just about systems and infrastructure. It's about full-out leadership and pushing and pulling the corporation forward," Singleton said. "Today, you have to combine all of these things into the art of IS." □

Top dollar for cream of the crop

The market for CIOs just keeps getting hotter, as companies seek competitive advantages from electronic commerce and other new technologies. Executive recruiters said the number of CIO searches has skyrocketed in the past two years.

And money appears to be no object for companies set on acquiring a true Renaissance IS executive.

For companies with an IS budget of \$150 million, the average CIO base salary is \$300,000 to \$400,000, recruiters said. Signing bonuses run up to \$150,000, and stock options can amount to another \$300,000 to \$400,000 over a period of several years.

At \$1 billion-plus financial services companies, CIOs can make nearly \$2 million per year, excluding stock options, according to David Foote, managing partner at Cromwell Partners LLC and a contributing analyst at Meta Group, Inc. in Stamford, Conn. Those CIOs get \$800,000 to \$900,000 in salary, plus another \$800,000 to \$900,000 in cash bonuses, he said.

Those figures are well above average, and they apply only to the cream of the crop.

"People are recruiting CIOs more in the vein they would chief financial officers or their top management team," said Jim McClure, a vice president at Korn/Ferry International.

Also, searches are taking longer — sometimes up to a year. Then, once a candidate is found, interviews with the CEO, chief operating officer and chief financial officer and other high-level executives aren't unusual.

"More companies are... making sure they have buy-in from all of the senior team members," said Donald Pizzi, an IS executive recruiter at Mark Adams Associates. — Julia King

Fast facts about today's CIOs

Companies that replaced their CIO in the past two years:

1996 39%

1997 30%

CIOs promoted from within IS organization:

1996 20%

1997 24%

CIOs recruited from another department:

1996 20%

1997 26%

CIOs recruited from outside:

1996 56%

1997 49%

Base: 339 CIOs in North America

Source: Computer Sciences Corp., El Segundo, Calif.

The SAS® Data Mining Solution

Discover the Diamonds in Your Data Warehouse



Introducing the first-ever, fully integrated data mining solution...one that maximizes your return on investment in data warehousing and data marts—as decision makers exploit your customer data for competitive advantage.

SAS Institute, for 20 years the leader in data discovery, provides the most complete and reliable data mining solution for modeling, measuring, and enhancing the profitability of your business. This Web-enabled, point-and-click approach lets you employ OLAP, neural networks, churn analysis, and many other visualization and analytical techniques to **improve customer retention, target key prospects, profile market segments, detect fraud, analyze customer response**, and much more.

Begin Your Discovery with our Free Web-Integrated CD ROM

Digging for Diamonds: The SAS® Solution for Data Mining lets you explore data mining from both a business and an IT perspective. And it's linked directly with our World Wide Web site, so you can continue to make new discoveries and gain fresh insights.

To request your copy, visit SAS Institute at www.sas.com/datamining/ or give us a call.



SAS Institute Inc.

The Business of Better Decision Making

E-mail: cw@sas.com

www.sas.com/datamining/

919.677.8200

In Canada 1.800.363.8333

If we showed you its actual screen size, we wouldn't have room to tell you how powerful it is.

Space is severely limited, but the capabilities of the NEC Versa® 6200 are not. Its 13.3" active matrix LCD display is the largest and brightest of any notebook. An Intel® 166MHz Pentium® processor with MMX™ technology makes it the most powerful multimedia notebook around. And its modular design lets you customize the computer you need, when you need it.



Why NEC NOW?

- The security of partnering with a company known for its technological innovations.
- The flexibility of ordering direct or through a reseller.
- The expertise of System Consultants.
- The immediate availability of competitively priced products.
- The resources of one of the world's largest computer companies.



Our System Consultants can tell you which of our extensive line of notebooks is right for you. Call them. They make powerful partners for your business.



TFT color is bright, rich and photorealistic.

13.3"

Intel® 166MHz Pentium processor with MMX technology.

**BUILT
TO
ORDER**

©1997 NEC Computer Systems Division, Packard Bell NEC, Inc. NEC, Versa, and MultiSync are registered trademarks; VersaBay, A700, A500, C500, ESM, PortBar, MiniDock and Express5800 are trademarks, and UltraCare is a service mark of NEC Corporation, all used under license by Packard Bell NEC, Inc. Direction, VersaNote, VersaExec, and MagicEye are trademarks and NEC NOW is a service mark of Packard Bell NEC, Inc. Leasing based on typical 36-month lease with purchase option. Other lease options may be available, leasing arranged by third party leasing company to qualified customers. Prices do not include shipping or applicable sales tax, are valid in the US only and are subject to change without notice. Products and specifications are subject to change without notice. *Product is 56Kbps capable. However, due to FCC rules which restrict power output of the service providers' modems, current download speeds are limited to approximately 53Kbps. Actual speed may vary depending on line conditions. MS, IntelliMouse, Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation. NetWare and Novell are registered trademarks of Novell, Inc. The Intel Inside logo, LANDesk and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. All other trademarks and registered trademarks are property of their respective owners.



Up to 128MB RAM
available.

VersaBay modular
component technology
for maximum flexibility and
instant customization.

NEC Versa 6200 Series *The ultimate power notebooks.*

Common Features: 64-bit CPU and 32-bit PCI Bus Architecture • 32-bit CardBus Support • 2MB VRAM • 16-bit Stereo Sound with 3D Spatializer Technology • VersaBay™ II Option Slot Accepts CD-ROM, Floppy Drive (both included), Optional 2nd Hard Drive and 2nd Battery • Lithium Ion Battery • Upgradeable 3-Year Limited Warranty

Versa 6200MX

- 13.3" XGA Active Matrix TFT Color Display
- 166MHz Pentium processor with MMX technology
- 64MB RAM/ 3GB Hard Drive/10X avg CD-ROM
- * Upgrade to 128MB RAM, add \$699
- * Optional 2nd Lithium Ion Battery, add \$199
- * Optional U.S. Robotics® x2™ XJACK® 56Kbps* Fax Modem, add \$199
- * Optional NEC Docking Station 6000 Plus, add \$899
- * Optional NEC MiniDock™ 6000, add \$499

\$4999

Business Lease: \$180/mo.

Versa 6200MX

- 13.3" XGA Active Matrix TFT Color Display
- 166MHz Pentium processor with MMX technology
- 32MB RAM/ 2.1GB Hard Drive/10X avg CD-ROM
- * Upgrade to 64MB RAM, add \$299
- * Upgrade to 3GB Hard Drive, add \$299
- * Optional 2nd Lithium Ion Battery, add \$199
- * Optional NEC MiniDock 6000, add \$499
- * Upgrade to Microsoft® Windows NT® 4.0, add \$99

\$4399

Business Lease: \$158/mo.

NEC Versa 2700 Series *All-in-one convenience at a sensible price.*

Common Features: PCI Bus with 128-bit Graphics Accelerator • 256KB L2 Pipeline Burst Cache • 32-bit CardBus Support • 2MB VRAM • USB Port • 56Kbps* Integrated Modem • Stereo Speakers and Subwoofer with 3D Stereo Sound • Upgradeable 1-Year Limited Warranty

Versa 2760MT

- 166MHz Pentium processor with MMX technology
- 12.1" SVGA Active Matrix TFT Color Display
- 16MB RAM
- Built-in 2.1GB Hard Drive, 16X max CD-ROM, 1.44MB Floppy Drive, and Lithium Ion Battery
- * Upgrade to 80MB RAM, add \$699
- * Optional Lithium Ion Battery, add \$199
- * Optional NEC Versa PortBar™ 2700 Port Replicator, add \$159

\$3299

Business Lease: \$119/mo.

Versa 2730MT

- 133MHz Pentium processor with MMX technology
- 12.1" SVGA Active Matrix TFT Color Display
- 16MB RAM
- Built-in 1.44GB Hard Drive, 16X max CD-ROM, 1.44MB Floppy Drive, and NiMH Battery
- * Upgrade to 48MB RAM, add \$299
- * Optional Lithium Ion Battery, add \$199
- * Optional VersaNote™ Ballistic Nylon Carrying Case, add \$69

\$2899

Business Lease: \$107/mo.

NEC Versa 6060 Series *High performance desktop replacements.*

Common Features: PCI Bus with 128-bit Graphics Accelerator • 32-bit CardBus Support • 2MB VRAM • 16-bit Stereo Sound with 3D Spatializer Technology • USB Port • VersaBay II Option Slot Accepts CD-ROM, Floppy Drive (both included), Optional 2nd Hard Drive and 2nd Battery • Lithium Ion Battery • Upgradeable 3-Year Limited Warranty

Versa 6060

- 166MHz Pentium processor with MMX technology
- 12.1" SVGA Active Matrix TFT Color Display
- 48MB RAM/ 2.1GB Hard Drive/20X max CD-ROM
- U.S. Robotics x2 XJACK 56Kbps* Fax Modem
- MS Windows NT 4.0 with Free Telephone Support
- * Optional NEC Docking Station 6000 Plus, add \$899
- * Optional 2nd Lithium Ion Battery, add \$199
- * Optional NEC MiniDock 6000, add \$499

\$4099

Business Lease: \$148/mo.

Versa 6060

- 166MHz Pentium processor with MMX technology
- 12.1" SVGA Active Matrix TFT Color Display
- 16MB RAM/ 2.1GB Hard Drive/20X max CD-ROM
- * Upgrade to 48MB RAM, add \$299
- * Optional 2nd Lithium Ion Battery, add \$199
- * Optional U.S. Robotics x2 XJACK 56Kbps* Fax Modem, add \$199
- * Optional NEC PortBar 6000 Port Replicator, add \$199
- * Optional NEC MiniDock 6000, add \$499

\$3499

Business Lease: \$129/mo.

NEC Versa Options

VersaNote Ballistic Nylon Carrying Case, \$69 • VersaPro™ Ballistic Nylon Carrying Case, \$99 • VersaExec™ Leather Carrying Case, \$199 • AC Adapter, \$89 • DC Car Adapter, \$99 • NEC 104-Key Keyboard, \$39 • NEC Xircom 10Base-T Network PC Card, \$139 • Battery Charger, \$189 • Versa 6000 Extended UltraCareSM Service, \$99 • Versa 2700 Extended UltraCare Service, \$199

To order, get a free catalog or
find your nearest reseller call:
Mon-Fri 8am-8pm EST

1-888-8-NEC-NOW
Dept. No. CW529A www.necnow.com

NEC

Computer Industry

Briefs

White resigns

Just eight days after Informix Software, Inc. replaced him as president and CEO, Phil White resigned as chairman and gave up his seat on Informix's board of directors. Robert Finocchio Jr., the former 3Com Corp. executive who took over as president and CEO, now will also be chairman. Immediately following Finocchio's hiring, White said he expected to help the CEO through a transition period and assist with strategy and customer relationships. Informix is in Menlo Park, Calif.

Cannavino quits

James A. Cannavino has resigned as CEO of Perot Systems Corp., the computer services firm started by Ross Perot. Morton H. Myerson, chairman of Perot Systems, will be the acting CEO until a replacement is announced. Prior to joining Perot Systems in October 1995, Cannavino was a senior vice president at IBM.

Hayes merges

Modem maker Hayes Microcomputer Products, Inc. plans to merge with Access Beyond, Inc. in Gaithersburg, Md., in a \$267.2 million stock deal that will make Hayes a public company. Access Beyond makes networking equipment. Norcross, Ga.-based Hayes, which emerged from bankruptcy last year, will be renamed Hayes Communications, Inc.

Jobs to Pixar: No exit plans

► Co-founder's return would reinvigorate, but firm needs new strategies

By Kim Girard

APPLE CO-FOUNDER Steve Jobs quickly quashed last week's rumors that he planned to reunite with Apple as its new chairman — an appointment some users said would help rejuvenate the struggling company.

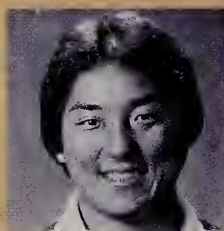
In an electronic-mail message sent to employees at Pixar Animation Studios, Jobs said he had rejected Apple's offers to become chairman and CEO. Jobs is CEO, president and chairman of the board at Pixar.

"I got a call from Apple's board of directors three weeks ago informing me that they were going to fire their then-current CEO, Gil Amelio, and asking me to return to Apple as their CEO," Jobs wrote last Thursday. "I declined, but agreed to step up my involvement with Apple for up to 90 days." When the board asked him to be chairman, Jobs said he again declined.

"So don't worry — the crazy rumors are just that," he wrote. "I have no plans to leave Pixar."

Jobs is the scheduled keynote speaker this week at Macworld Expo/Boston, where some industry observers are still expecting the Apple co-founder to be named Apple chairman.

Who should replace Gil Amelio as head of Apple?



23.7%

Guy Kawasaki
Apple evangelist



19.5%

Steve Jobs
Apple co-founder



13.5%

Ellen Hancock
Former Apple executive

Base: 6,286 Web hits

Source: Macaddict (www.macaddict.com)

Jobs, 42, was forced out of the chairman's seat 12 years ago. He returned last December as a consultant after he sold his company, Next Software, Inc., to Apple. But some said Jobs' grip on Apple could scare away potential CEO candidates.

"He's a strong personality, and it may make it hard for Apple. Who's going to want to run a company with Steve Jobs?" said Rex Sanders, information systems coordinator at the coastal and marine geology department of the U.S. Geological Survey in Menlo Park, Calif.

Industry insiders said Jobs played a part in ousting Apple Chairman and CEO Gil Amelio, who left after just 17 months.

The board cited dissatisfaction with the Cupertino, Calif.-based company's financial failures.

Pieter Hartsook, an independent Macintosh industry ana-

lyst, said Jobs is in an odd situation because although he is the company's de facto leader, he lacks the title.

"Right now he's kind of like a teen-ager. He gets to boss people around and have fun and he has no responsibility for his actions," Hartsook said.

Jobs could rally the company and improve morale, but as chairman he wouldn't be a "silver bullet," said Dan Kunstler, an analyst at J. P. Morgan Securities in San Francisco. "This image of anyone coming in on a white horse as savior, I just don't think that applies."

More important, Apple needs to focus on fixing its business and licensing strategy and keeping its products on schedule — a downfall that has irked users.

Sanders said he recently tried to purchase Power Macintosh 8600s and couldn't get them. The other options: 7300s and 9600s. He chose 7300s. □

CONSOLIDATION

National Semi, Cyrix pool their chips

By April Jacobs

NATIONAL SEMICONDUCTOR Corp.'s decision to acquire Cyrix Corp. is a sign of growing consolidation among chip makers, which may mean stiffer competition for Intel Corp., analysts said.

National Semiconductor, in Santa Clara, Calif., is buying Cyrix mostly for its desktop chip, which is x86-compatible and competes with Intel's Pentium line. National Semiconductor still will supply chips for peripherals to Cyrix rivals Advanced Micro Devices, Inc. and Intel.

Analysts said the deal is a good one for National Semiconductor and Cyrix. "This will be a very good thing for Cyrix, because they'll get additional financial support from National Semiconductor," said John MacGilvary, chief analyst at Datapro Information Services Group in Delran, N.J.

"National Semiconductor can provide more for them in terms of manufacturing capabilities as well. But whether this will improve their marketability remains to be seen," he said.

MacGilvary said National Semiconductor can benefit by having a new desktop chip to leverage.

National Semiconductor and Cyrix plan to pool their resources to make processors for inexpensive PCs and new devices such as handhelds.

Intel still retains overwhelming market share, but the \$550 million deal may spell increased competition for the Santa Clara company.

Intel recently reduced prices on its Pentium MMX line by almost half. For example, a 200-MHz Pentium MMX chip that cost about \$500 in June now costs about \$250. Prices for portable chips were cut to about \$125, a reduction of 46%. □

"This will be a very good thing for Cyrix ..."

— John MacGilvary
Datapro

Amdahl buyout produces questions, not change

By Tim Ouellette

MAINFRAME PIONEER Amdahl Corp. has decided it can't go it alone any longer.

Fujitsu Ltd. in Japan this week will begin purchasing the outstanding shares of Amdahl stock for \$12 a share — or approximately \$850 million for the total deal.

"This merger will give us the financial staying power we need

to compete," said Amdahl CEO John Lewis.

Amdahl needs ready access to cash to keep up with rivals IBM and Hitachi Data Systems Corp. in the mainframe market, where prices are falling and product life cycles have shrunk from five years to barely one year. And the pressure is on: Amdahl has already mapped out its three-year product plan for users and needs to deliver.

Little will change at Amdahl after the merger. The Sunnyvale, Calif., firm will retain its name, management team, employees and existing contracts.

But questions remain.

"Why now, when you are turning Amdahl from a hardware into a consulting company?" asked John Jones, an analyst at Salomon Brothers, Inc. in San Francisco. Amdahl expects nonhardware sales to be 67% of its revenue this

year. Other analysts said the \$12 tender offer was low based on Amdahl's growth in the consulting area. Lewis said it was a fair price. But shareholders didn't agree.

They are filing a class action lawsuit to stop the deal, claiming Amdahl isn't taking shareholders into account with the low price. But since Fujitsu already owns 42% of Amdahl shares, it needs to buy only another 9% to get controlling interest. □



Amdahl's John Lewis:

The merger will give the company financial staying power

SECRETS & STRATEGIES



Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____
Title _____ Company _____ E-mail address _____
Address _____ City _____ State _____ Zip _____
Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price: \$3.00/issue *U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)

- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

- 90. Computer/Peripheral Dealer/Dist./Retailer

- 95. Other _____

(Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT

- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers

- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT

- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

- 3.** Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

- (a) Solaris (e) Mac OS
- (b) Netware (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTstep

App. Development Products

☐ Yes ☐ No

Networking Products

☐ Yes ☐ No

Intranet Products

☐ Yes ☐ No

- 4.** Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)

- (a) ☐ Internet software
- (b) ☐ Internet browsers
- (c) ☐ Web authoring/development tools

COMPUTERWORLD

B4H7 V

NEW IDEAS



Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____
Title _____ Company _____ E-mail address _____
Address _____ City _____ State _____ Zip _____
Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price: \$3.00/issue *U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)

- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

- 90. Computer/Peripheral Dealer/Dist./Retailer

- 95. Other _____

(Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT

- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers

- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT

- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

- 3.** Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

- (a) Solaris (e) Mac OS
- (b) Netware (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTstep

App. Development Products

☐ Yes ☐ No

Networking Products

☐ Yes ☐ No

Intranet Products

☐ Yes ☐ No

- 4.** Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)

- (a) ☐ Internet software
- (b) ☐ Internet browsers
- (c) ☐ Web authoring/development tools

COMPUTERWORLD

B4H7 V



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



Vendors create blueprint for linking apps

By Randy Weston

LINKING DISPARATE applications is about to get much easier as vendors sign on to a set of common blueprints for building connections between products.

"The two main benefits we are driving for and hearing from users are: faster and cheaper implementations and much cheaper maintenance over time," said David Connelly, chief technology officer at the Open Applications Group (OAG) in Chicago.

OAG specifications for linking enterprise resource planning applications:

- Manufacturing to human resources
- Manufacturing to purchasing
- Manufacturing to order management
- Accounts payable to purchasing
- Invoice matching for two-, three- or four-way matching
- Human resources to financials
- Chart of accounts synchronization

The nonprofit OAG is a consortium of application vendors that includes market leaders SAP AG, Oracle Corp. and PeopleSoft, Inc.

Most of the vendors either have products on the market that comply with the specifications or are integrating the specifications into the next release of their products.

Called OAGIS 5, the latest batch of specifications goes to the heart of corporate computing by giving vendors and users common ways of linking applications such as financials to purchasing or human resources to financials (see chart).

The idea is to create common pivot points, the place at which independent applications connect, Connelly said. The specifications "explain how the application program methods can exchange data with other compliant business applications."

But Connelly cautioned that these

specifications aren't the Holy Grail of best-of-breed computing. Users will still need to do work, specifically the technical aspects of melding two applications.

What the specifications do is give users the blueprint. Still, users are glad their

vendors are getting together to come up with some form of common gateway among products.

"It makes the idea of best-of-breed more feasible and less risky," said Carlos Cabrera, chief information officer at Sun Chemical, Inc. in Fort Lee, N.J.

"Although most companies in reality do follow some form of integration with legacy or transition systems, the idea of a totally integrated solution is always appealing," he said. "But in most circumstances it is not practical, either due to cost or lack of functionality or the fact that the company just does not have all their modules out on the market on time, and the customer cannot afford to wait." □

OUR NEWS HITS YOUR SCREEN THREE TIMES A DAY



Listen, when it comes to seeking, finding and delivering the latest-breaking IT news, no one holds a candle to our painstakingly diligent writers and editors. Be that as it may, the esteemed and hallowed pages you hold in your hand, are in fact, weekly pages.

Which means if we go to press on Sunday, and a vendor slashes prices or a trade show

keynoter puts his foot in his mouth on Monday, there will be no pithy headline, no meaningful analysis, no press-release photo — until next week's issue.

And we know a lot of you IT leaders don't want to wait that long. (Hell, a lot of you order drip coffee 'cause you don't want to wait for a latté.) You want today's IT headlines, well, today.

Allow us, then, to direct you to our website, at www.computerworld.com. Where you'll find the latest news, product reviews, online roundtables, RealAudio interviews, strategic advice (one company saved \$250 billion by shutting down its legacy systems) and industry scuttlebutt. All updated three times a day.

Are we advocating you forgo the in-depth coverage of Computerworld? Hardly. Just that you get your daily fix.



©1997 Computerworld, Inc.

**TECHNO
Q
Y
S**

Win a Cool Prize Every Week!

Enter the TechnoToys
Sweepstakes in
Computerworld
Marketplace

(following IT Careers)



COMPUTERWORLD



TRAIL · GUIDE

**TIRED OF
LISTENING TO THOSE
IT'S-OUR-WAY-OR-THE-HIGHWAY-
CUZ-WE'RE-THE-BIG-KAHUNA-
OF-BUSINESS-SOFTWARE-
AND-YOU'D-BETTER-
BUY-NOW-OR-YOU'LL-
BE-LEFT-BEHIND
SOFTWARE COMPANIES?**

YOU'RE NOT ALONE.

We're Lawson Software,
the Web Enterprise Company.TM
And we do things
a little differently
around here. For
starters, we're delivering
today what everyone else is
promising tomorrow: web-accessible,
Self-Evident Applications,TM enterprise
self-service and automated workflow
environments. So while those other
companies are "working on it,"
we're busy implementing process-
oriented solutions and utilizing
web technology to get our clients
up and running that much faster.
And our financials, human resources,
procurement and supply chain process
suites are as user-friendly as the people
who develop, install, and support
them. Ask any of our 2,500 clients
worldwide. It's all in our attitude —
or lack of one. For more information,
visit www.lawson.com/guide or call
us at 1-800-477-1357.



TRAITS OF A GOOD SOFTWARE COMPANY.

•ATTENTIVE



*Asks you what
you need instead
of talking you into
what they've got.*

•FAST



*Provides quick
implementation and
quick access to data.*

•SMART



*Thinks beyond data-
bases to innovative
data access and
analysis capabilities.*

•ADAPTABLE



*Adapts smoothly to
different corporate
environments, as
well as changing
technologies.*

LAWSON
Software TM

LEADING EDGE TECHNOLOGY WITHOUT THE ATTITUDE

O P I N I O N

Alternate realities Our front-page story last week jangled a lot of readers' nerves

["Microsoft declares war: Stuns Sun with refusal to ship Java class libraries"]. Many of you have been furiously E-mailing to tell us of your dismay.

"Most IT professionals look at Java as a way of finally trying to get applications to work in harmony on different platforms," wrote one user at a large insurer.

"Microsoft will make its prediction that Java will never be really 'write once, run anywhere' a self-fulfilling prophecy simply by obstructing that goal on Windows platforms," another IS professional glumly noted.



What no one expressed was surprise. Of course Microsoft wants to derail Java's escalating potential as a truly cross-platform development language. Java is the kryptonite that could sap the Superman strength of Windows.

Users and developers are witnessing the desktop giant's struggle with a peculiar form of cognitive dissonance: the uneasy psychological state where two incompatible beliefs collide, driving the sufferer to do whatever it takes to reduce the discomfort. Like creating alternate realities.

When the Internet didn't fit Microsoft's desktop-centric view, for example, corporate users were told to ignore its potential. Oops, change of reality. ("We're hard-core about it now.") When network computers rolled onto the scene, Microsoft officials scoffed. Oops, reality-adjustment time. ("We've got a half-baked NetPC to talk about now.")

With last week's blustering declaration, Microsoft officials sternly reminded their developers that they don't *really* want to write to the Java APIs. ("So we'll make it as difficult as possible for you.")

But as outraged customers and developers make their objections known — and they will — Microsoft will have to respond. So stay tuned. There'll be an alternate reality along any day now.

Maryfran Johnson

Maryfran Johnson, executive editor
Internet: maryfran_johnson@cw.com



L E T T E R S

The Ghost of Dilbert Past

IN *Computerworld's* June "Best Places To Work In IS" supplement, the designation of Price Waterhouse would have made Ebenezer Scrooge proud.

Here's a firm whose practice of trying to let employees spend the weekend at home [whenever possible] is unbelievably passed off as a "lifestyle concern" that is key to retaining IS employees. Perhaps Ebenezer could have enjoyed this distinction had he agreed to purchase the inside cover ad space before Price Waterhouse did. Keep up the good work, and I can stop reading "Dilbert."

T. Conway
Chicago

Anonymous E-mail makes harassment too easy

MICHAEL SCHRAGE's column in the June 9 *Computerworld* ["Anonymous E-mail fans flames of corporate conflict"] was very thought-provoking.

The role of anonymity is a key question every organization must address, since there is a need for allowing employees to express anonymous comments on corporate policy or issues. Protecting the anonymity of those individuals is a key component in allowing employees the freedom to make candid comments. This can be implemented by having a special discussion group or hot line where anonymous comments can be left to be reviewed by the firm's management.

That said, I believe there is no corporate need to allow employees to send anonymous E-mail to each other. As Schrage points out, the potential for harassment is great.

There should be no right to anonymity for personal, one-to-one communications.

Sheldon Laube
Chief technology officer
USWeb Corp.
Santa Clara, Calif.

Year 2000 is no 'big bang'

IBRISTLED AT columnist Michael Schrage's editorializing in *Computerworld's* July 14 issue to "Go for the big bang, but not too often." To me, a revolution is a statement of failure: The current systems don't work. Or, as in the year 2000 issue, they will break soon. Schrage's rationale for year 2000 work was from a standpoint of self-aggrandizement, grabbing the corporate "attention economy." Yell loud for resources only because everyone else is doing it. Where are the business reasons?

Using a sociopolitical analogy to a revolution, a big bang simply replaces one nonfunctioning and ossified system with another. How many companies are taking Schrage's charge to rid themselves of legacy systems with year 2000 issues only to find two years from now that their project timetable is going to slip because they didn't address the right problem?

Bernard Werner
MIS director
Erie Plastics
Corry, Pa.

Columnist's ownership cost figures need reality check

IT MAY BE TOO many years inside the beltway or the dank air, but Paul Strassmann's grumbling about lack of productivity and total ownership cost (TOC) reminds me

a lot of Bob Dole: a grumpy old man without a real message. Seeing the TOC figure of \$29,100 per client in that column ["To lower ownership costs, manage them better," CW, July 14] stretched the credibility of the whole TOC issue to the breaking point.

So I figured out what my TOC was. My small office is networked, and the equipment is replaced every two or three years. The TOC average for the past three years is less than \$1,500 per year per computer — not counting my time as

As we used to say on the farm, that's a load!

chief LAN, software and systems administrator; software installer; trainer (for office manager/spouse); and printer cartridge changer.

As to the argument that the greatest TOC element is the lost productivity from system downtime: As we used to say on the farm, that's a load! If those folks can't find something productive to do when the system is down for 1% to 2% of the working month, then there is a management problem.

John Blair
Carefree, Ariz.

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Wanna earn \$10? Read this column twice

Robert L. Scheier

To: My investors
From: Burned-out entrepreneur
Re: Web communities

OK, I give up on this Web community stuff. I've finally decided that I'll never make it in this business.

It wasn't those long hours in the basement monitoring forums that did me in. (All I had to do, I figured, was wait until this chat attracted enough people to the site so BMW and Budweiser would pay big bucks to advertise.)

And I didn't get too discouraged, even after I found out you need 25 million to 30 million page views per month to even start making money selling ads on your site. Hey, I've still got room left on my credit cards, and my wife hasn't left with the kids — yet.

No, the final straw came when I heard the most ridiculous idea for making money on the Web and found out it actu-



The fact that this idea actually works proves I'll never understand this Web community stuff.

ally works. The fact that this idea actually works proves I'll never understand this stuff and should quit trying.

What's the idea? *Pay people to look at ads!* Literally. It's done by this outfit called CyberGold, Inc. out of — where else? — Berkeley, Calif.

I didn't believe it at first, so I checked the company's Web site at www.cybergold.com. Right now, you can take your money

in real cash or digital cash that lets you buy stuff on the Web. Come September, CyberGold plans to let you credit the money you earned reading ads to your Visa account.

REAL-LIFE USAGE

After I stopped laughing, I called CyberGold and dared the company to show me a real, paying client that had spent money on this ridiculous idea. Well, CyberGold found a customer, and the joke's on me.

The customer spent about \$25,000 on a CyberGold campaign and was tickled pink. It's a small distributor of computer monitors that can't afford big TV or print advertising campaigns, so the company was testing CyberGold as an alternative to direct mail.

With direct mail, you pay to rent a mailing list, you pay to write the material, you pay for printing and postage. If you're lucky, you get a 2% to 3% response rate, which you then have to sift through for leads.

Compare that to paying people to read ads on the Web. The advertiser prepares

the online ad, pays a fee to CyberGold and sits back. Interested customers find your ad and for \$25,000, the advertiser at least knows how many eyes saw it.

Because the company sells through retail, it can't say how many extra sales were made as a result of the promotion. But the leads include a few corporate customers that could make the experiment worthwhile with one big purchase.

But how about mainstream products? Again, this advertiser said the sky's the limit. How about paying a customer \$5 to take a virtual test drive in a new minivan on your Web site? Or \$5 to watch a promotion about a planned product and answer some questions about it?

A lot of companies are already spending that much and more on promotions without the measurable results you get on the Web.

The more I thought about it, the more depressed I got. I can't figure out this new Web world, and I want to make some real money for a change.

So take back your stock options and send me a trackball. I've got a lot of ads to look at. □

Scheier is Computerworld's senior editor, management.

When extranets go awry

John Gantz

Extranets are hot. Research with lead users by my company indicates that the well-executed deployment of a Web-based application from a company to a community of suppliers or customers can pay immense dividends. We've done case studies where the return on investment of the extranet is so high that we simply can't publish it. Nobody would believe it.

The key word here is well-executed. Now that businesses are gaining more experience with extranets, we're finding out that high ROI is *not* guaranteed.

The effectiveness of my firm's extranet falls somewhere in the fat part of the bell curve. We launched an extranet this year to deliver our core product — information services — to clients. Now they can get off the Web what they previously could get only on paper or through Notes.

The system works great, the clients that use it like it, and some clients have even modified their internal systems to take advantage of it.

But many clients that could use it don't — for a variety of reasons over which we

have little control. Hard experience and the larger body of case research show where some of the flies in the extranet ointment lie:

■ **Bad IS at the other end.** Most of the glitches our extranet users experienced are the result of IS inattention at their end. For instance, passwords not given out, desktop configurations that don't fit and inadequate access. Our users have to beg for time and support from their own IS departments.

■ **Application scale.** Organizations accustomed to specifying, developing and installing intranet applications across a department

find that new rules apply when those applications run across an enterprise, then into a customer base. Software, service contracts, version control — everything is different. Usually neither the department nor IS have much experience with the new kind of application.

■ **Internal access.** Extranets, by nature, were designed for outsiders, and in many cases, they gain access to the application before internal employees do. We got our customers signed on to our extranet months before we began to provide access to employees worldwide — because that's where we felt we had the most competitive advantage. Similarly, Federal Express had its shipping application ready for clients before its service and support staff had it.

■ **Awareness.** Without continual outreach, an



Clients that could use your extranet won't, for reasons you can't control.

extranet can go unused. It's like any other product — it needs to be marketed, advertised and enhanced. Most IS departments aren't culturally attuned to selling the applications on the open market, which is what has to happen with extranets.

■ **User IT literacy.** We find that most of the technical support calls we handle stem from users' lack of familiarity with their computers, browsers and internal systems. With an extranet you have no visibility of or control over end-user IT proficiency.

Launching an extranet is a little like giving birth. There's lots of literature on what to do before the baby comes (application development and roll-out) but very little on what to do when the baby's home (generating usage).

Think about how to evangelize your application even as you design the specification. A happy set of beta customers doesn't mean your whole customer base will glom on to the application. And don't be surprised at how many problems you'll have to fix at the customer's end before your extranet is really humming.

Gantz is senior vice president, International Data Corp. in Framingham, Mass. His Internet address is jgantz@idc.com.

In an ideal world, the company you trust
and servers would make
Welcome to an ideal world.



for PCs
switches too.

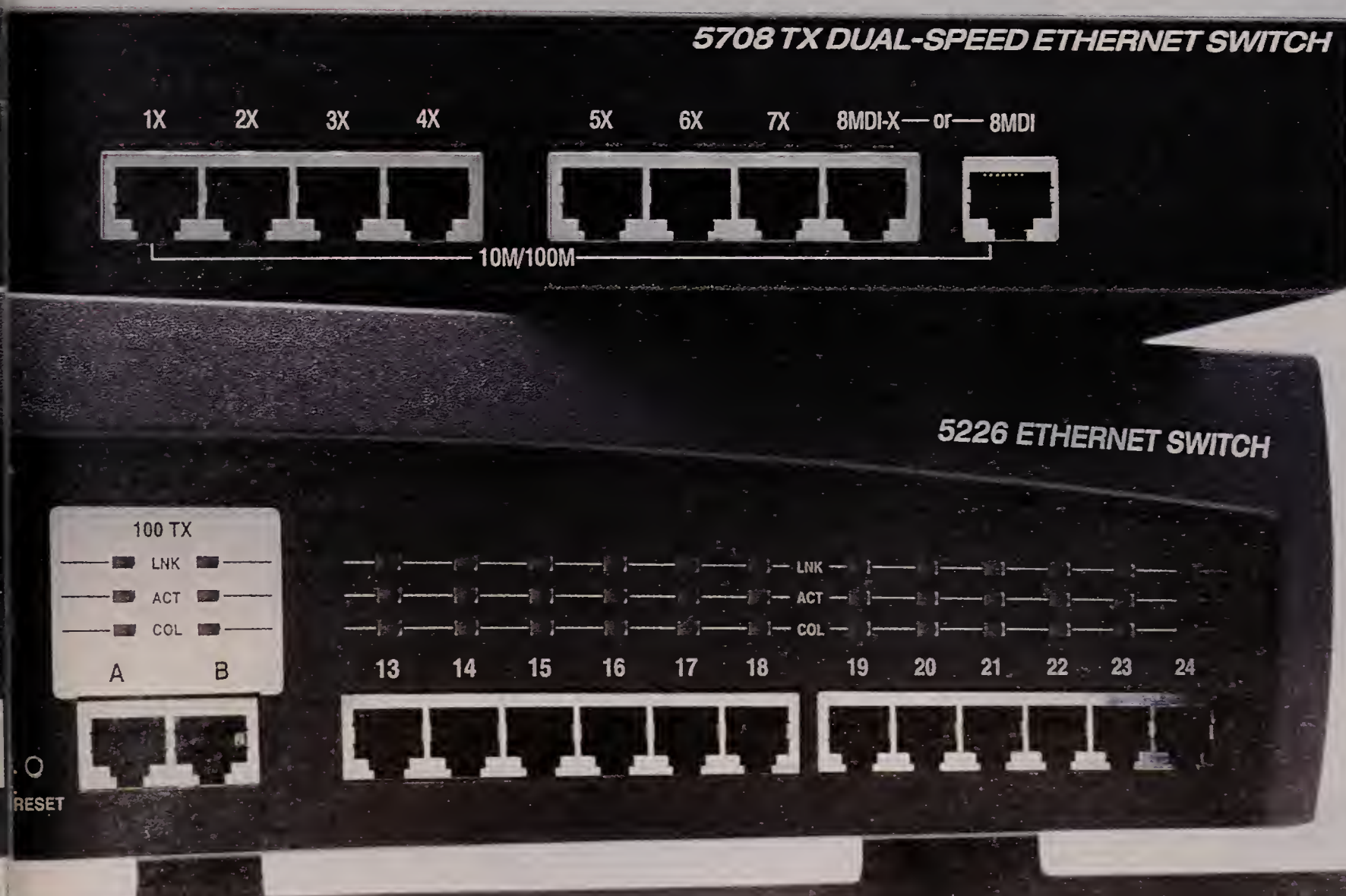
Wouldn't it be great to get the same quality and performance in your switches that you've come to expect from your PCs and servers? Wouldn't it be Utopia? At the very least it would be close.

Introducing the newest additions to the Compaq Netelligent Switch family that provide breakthrough bandwidth easily and affordably. Like the Netelligent 5708 Dual-Speed Ethernet Switch. Because it's autosensing, all 8 ports automatically configure to either 10 or 100MB/s at full- or half-duplex for truly flexible migration.

Then there's the Netelligent 5226 Workgroup Ethernet Switch. It lets you manage your workgroups at desktop switching prices. With 24 Ethernet and 2 Fast Ethernet ports, all with full- or half-duplex operation, you can future-proof your network, boost performance and relieve bottlenecks. And thanks to Compaq ASIC technology, it delivers fast access to your applications at wire-speed.

Additionally, our Netelligent switches with modular designs let you configure solutions to match your needs. Other innovative features include a hot-swappable, dual-redundant power supply and built-in manageability with Compaq Netelligent Management Software, SNMP, Telnet, VLAN

and RMON probe support. Netelligent switches from Compaq. In a world where you don't expect anything to be ideal, isn't it refreshing to find a few things that are? For more information visit us at www.compaq.com/products/networking or call 1-800-645-6645.



COMPAQ

C O M M E N T A R Y

In case you missed it

DAVID MOSCHELLA

HERE'S A RECAP OF recent events, great and small, that happened during this surprisingly active summer. It's hard to defend huge executive severance packages, but why is Apple's Gil

Amelio taking such a press-pounding when AT&T's John Walter, who never even became CEO, walked away with \$25 million, twice as much as Amelio for a similar length assignment? Lest we think that platinum parachutes are unique to our industry, remember that last year Michael Ovitz was handed \$100 million on



his way out the door at Disney. Few issues make the free market system seem more unfair, even rigged.

And for those who prefer their numbers in the billions: Everyone knows that Bill Gates is now the world's richest businessman, but

has there ever been anyone who has earned so much by doing as little as Microsoft's long-retired co-founder, Paul Allen, now ranked 7th and worth more than \$15 billion? The computer industry, by the way, placed 18 members on the recent *Forbes* list of 200 global billionaires.

EMMERCE YOURSELF

i n E l e c t r o n i c C o m m e r c e

Electronic Commerce: New marketplace. New characteristics. New rules. The EC landscape is changing fast and you need an authoritative guide to emmerce yourself in this revolutionary new IT market direction.

For advertising information, contact:

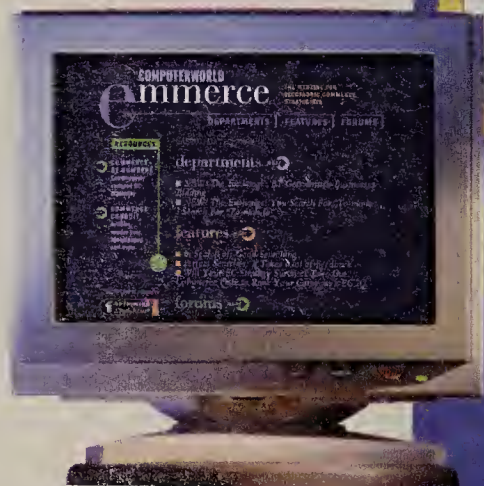
John S. Gordon,
National Director of Business
Development, Computerworld
Phone: (770) 668-5414
Fax: (770) 394-6354
E-mail: john_gordon@cw.com

Computerworld Emmerce: A primary source for 21st century IT Leaders. Computerworld Emmerce is the only print magazine and companion Webzine that explores the technologies and business management issues of electronic commerce.



▲ Computerworld Emmerce Magazine
Published September 8 & December 8

◀ Computerworld Emmerce Webzine
www.computerworld.com/emmerce
Content refreshed every two weeks



COMPUTERWORLD
The Newsweekly for Information Technology Leaders

IBM'S BLUES

Consistently lost within IBM's solid second-quarter financials is the dismal performance of its enterprise PC business. Its corporate market share is plummeting, and its customer satisfaction ratings are less than mediocre. That nobody on Wall Street seems to care just reinforces the view that IBM is now a services company that also sells a lot of mainframes and AS/400s. Lou Gerstner also appears indifferent; he just promoted Bob Stephenson, who had ultimate responsibility for PCs, to the even more important job of running the mainframe and minicomputer division.

But for real confusion in the PC business, try Compaq. Does anybody actually understand Compaq's description of how it can sell both direct and through channels? The company's tangled statements remind me of the managed-competition rhetoric of the Clinton health care plan.

BIG BUYOUT

On a related note, with the direct model for PC sales looking so powerful, both Gateway and Micron are certainly acquisition targets for those who like to buy high. But if anyone is going to step up and overpay, it probably won't be one of today's major PC players — IBM, Compaq or Toshiba.

It would be much easier for someone without all their product and channel baggage.

Of course, Compaq isn't the only company talking out both sides of its mouth. Did you see Sun's recent ad in the *Wall Street Journal* urging any customers planning a migration to NT workstations to first check out the virtues of Solaris desktops? Whatever happened to thin clients? Sun, of course, deserves a special chutzpah award for its ability to so quickly and effectively change even its most basic messages.

Meanwhile, Microsoft made Internet audio leader, Progressive Networks, an offer it couldn't refuse, taking a 10% share and essentially eliminating one of its more interesting competitors. Microsoft has also, as predicted in this column, indicated that it will scale back its content efforts a bit. That's bad news for the anti-Redmond forces, who could always find comfort in watching Microsoft suffer. □

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.



SERVERS SO EASY TO MANAGE, YOU'LL HAVE TO INVENT NEW WAYS TO LOOK BUSY.



Taking care of business is a breeze when you get a Micron™ Vetix™ Mxi. It's a dependable, expandable server that will smoothly manage your network. You'll get redundant power supplies and high-degree, fault-tolerant components including hot-swappable hard drives – all at an incomparable price. At Micron, we understand that a server must meet your needs.

So our Vetix Mxi gives you a custom-tailored server to fit

your exact specifications. You're supported by our award-winning, 24-hour technical



PENTIUM PRO
PROCESSOR

support team or optional on-site service from Digital Equipment Corporation.

And you'll get one of the best warranties out there, from the most solid

company in the industry. So get a Micron. And then get down to business.

MICRON POWER WARRANTY

5-year limited warranty on microprocessor and main memory
3-year limited parts-only system warranty (1-year for TransPort Vix)
1-, 2- or 3-year optional on-site service agreement for Micron desktop and server systems
30 days of free Micron-supplied software support for Micron desktop systems; 3 optional
network operating system incident resolutions included for Micron server systems
30-day money back policy
24-hour technical support

The foregoing is subject to and qualified by Micron's standard limited warranties and terms and conditions of sale. Terms and conditions of sale may vary for specific configurations. Copies of the limited warranties may be obtained on our Web site or by calling Micron.

GSA Contract #GS35F4317D

Micron Sales Hours: Mon-Fri 6am-10pm, Sat 7am-5pm (MT)

Technical Support Available 24 Hours A Day-7 Days A Week.

Toll free from Mexico: 95-800-708-1755 • Toll free from Canada:

800-708-1758 • Toll free from Puerto Rico: 800-708-1756

International Sales: 208-893-8970 • International Fax: 208-893-7393

©1997 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible for omissions or errors in typography or photography. All purchases are subject to availability. Prices and specifications may be changed without notice; prices do not include shipping and handling and any applicable taxes. 30-day money-back policy does not include return freight and original shipping/handling charges, applies only to Micron brand products and begins from date of shipment. All sales are subject to Micron Electronics' current terms and conditions of sale. Lease prices based on 36-month lease. The Intel Inside Logo and Pentium are registered trademarks and MMIO is a trademark of Intel Corporation. Microsoft, Windows, Windows NT and the Windows logo are registered trademarks of Microsoft Corporation. Other product names used in this publication are for identification purposes only and may be trademarks of their respective companies.



MICRON VETIX Mxi

Intel® 200MHz Pentium® Pro processor
128MB ECC EDO RAM
Three 4GB Ultra-Wide SCSI-3 hard drives (12GB total)

STANDARD FEATURES

Dual Pentium Pro ZIF sockets
256KB integrated L2 cache
Memory upgradable to 1GB (8 DIMM slots)
8 open expansion slots: 5 PCI, 2 ISA, 1 shared ISA/PCI
Integrated Adaptec PCI Ultra-Wide SCSI-3 controller
Integrated Intel EtherExpress™ Pro 100 controller
Integrated SVGA graphics
12X variable speed SCSI CD-ROM drive
3.5" floppy drive
5 internal, hot-swappable, hard drive array bays (upgradable to 10)
3 external 5.25" media bays
1 (one) 330 watt power supply standard
(upgradable to 3 for added redundancy)
Microsoft® Mouse, 104-key keyboard
Microsoft Windows NT® Server 4.0 (10-user license)
Intel LANDesk® Server Manager 2.52
Integrated hardware instrumentation
Dedicated server technical support, 7x24
5-year/3-year Micron Power™ limited warranty
1-year next-business-day on-site service*
NOS Support (3 incident resolutions/
1st year), 7x24

\$7,999

Bus. lease \$251/mo.

MICRON VETIX Lxi

Intel 200MHz Pentium Pro processor
64MB ECC EDO RAM
4GB Ultra-Wide SCSI-3 hard drive
15" Micron 500FCx, .28dp (13.7" display)

STANDARD FEATURES

Dual Pentium Pro ZIF sockets
256KB integrated L2 cache
Memory upgradable to 1GB (8 DIMM slots)
8 open expansion slots: 5 PCI, 2 ISA, 1 shared ISA/PCI
Integrated Adaptec PCI Ultra-Wide SCSI-3 controller
Integrated Intel EtherExpress Pro 100 controller
Integrated SVGA graphics
12X SCSI-2 CD-ROM drive
3.5" floppy drive
9 drive bays: 6 internal 3.5"; 3 external 5.25"
Microsoft Mouse, 104-key keyboard
Microsoft Windows NT Server 4.0 (10-user license)
Intel LANDesk Server Manager 2.52
Integrated hardware instrumentation
Dedicated server technical support, 7x24
5-year/3-year Micron Power limited warranty
1-year next-business-day on-site service*
NOS Support (3 incident resolutions/1st year), 7x24

\$5,099

Bus. lease \$160/mo.

*On-site service for Vetix servers is provided by Digital Equipment Corporation and is optional.

INTERNET OPTIONS

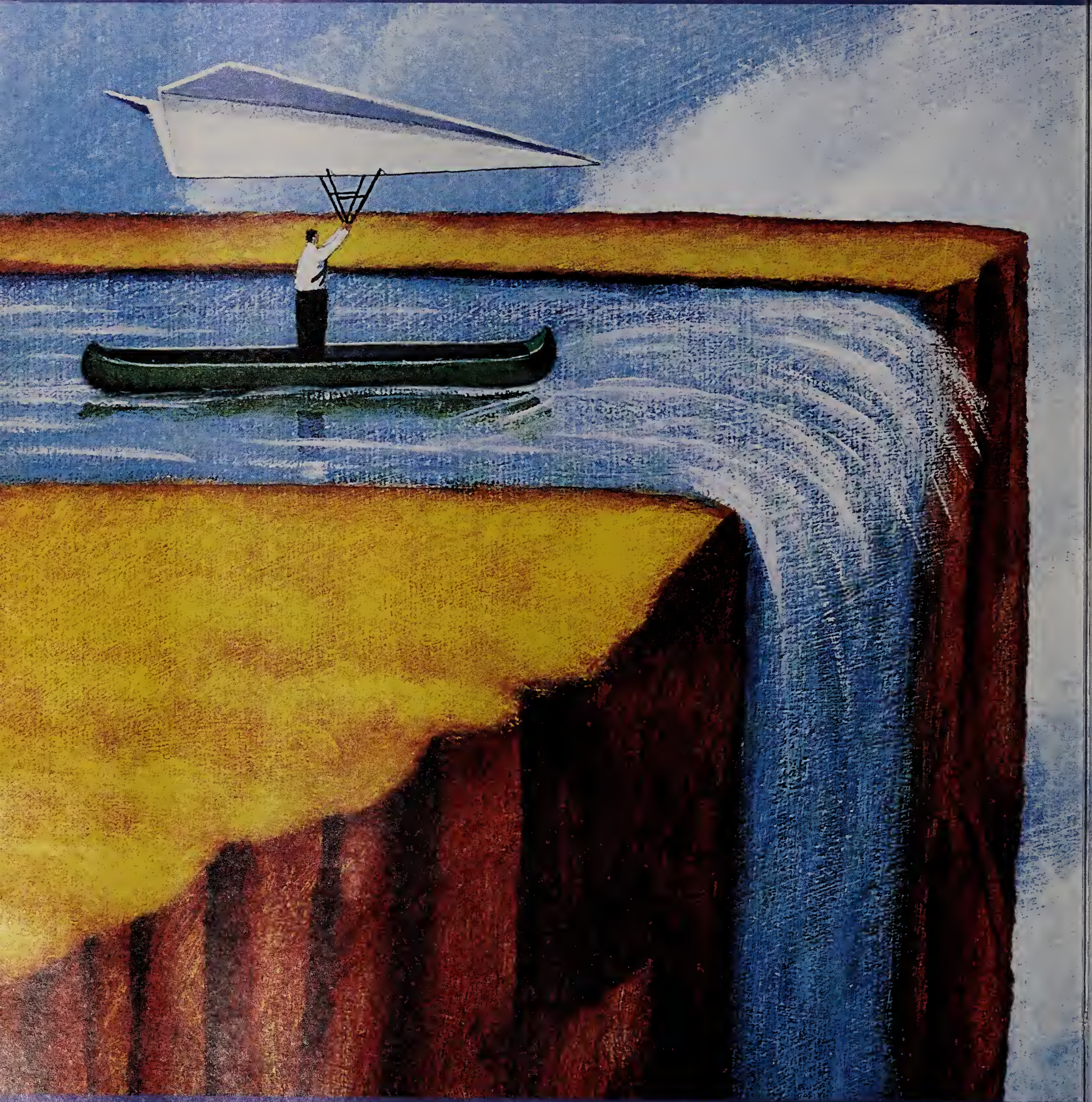
3Com OfficeConnect Hub 8/TPC	\$149
3Com OfficeConnect Switch 140	\$969
APC Smart-UPS 700 with PowerChute plus software	\$389
Sony 4/8GB SCSI DDS-2 tape backup drive with tape	\$749

Call now to order.
800•214•6676
www.micronpc.com



THINKING OUT OF THE BOX

WITH DISTRIBUTED APPLICATIONS, A PROBLEM



IS ONLY A PROBLEM IF YOU DON'T

SEE IT COMING.

Nobody likes to be blindsided by a problem. That's why we created Candle Command Center®, a solution which gives you the power to detect and control problems and manage your SAP R/3, Lotus Notes, and internally developed applications — all from a single management point.

Whether your applications run on ORACLE, Sybase, Informix, Microsoft SQL Server, DB2, IMS, or CICS — whether they run on Windows NT, UNIX, OS/400, or MVS and their associated networks — Candle Command Center has the scope, scale, and power to keep you in control.

Candle brings you the power to address the mission impossible problem of end-user application response time and the power to manage new technologies such as MQSeries.

To see how we can help you stay in control, call us toll-free at 1-888-322-9988 or visit our Web site at www.candle.com.

And begin thinking ahead today.

!Candle



asier

calculator.
Not too long ago, companies stored their data the way they stored their hard goods—in out-of-the-way warehouses where the real estate was the cheapest. But enterprises of all types are becoming increasingly aware that accessible, centrally located data warehouses are crucial cogs in the business machine. “Storage is becoming much more strategic as a component in the IT environment,” says P. J. O’Reilly, director

Data warehouses are becoming strategically vital to a business’s success. But the truth is, many are outgrown right after they’re delivered. They’re simply overwhelmed by ever-increasing amounts of data. Unless you have EMC Enterprise Storage.™ It’s the only solution that keeps mission-critical information available, protected and timely, even in the face of explosive growth. And it’s the only way to refresh data from multiple sources without sacrificing performance. To find out how a data warehouse with EMC

Not Without EMC Enterprise Storage They Aren’t.

Enterprise Storage can help you instantly respond to the ever-changing needs of your business,

call 1-800-424-EMC2, ext. 124, and we’ll send you an interactive CD-ROM. Or visit us at www.emc.com.

EMC²
The Enterprise Storage Company

Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

GLIEDMAN'S LAW OF FINGER-POINTING

"The number of phone calls required to solve a multivendor support problem is the square of the number of vendors involved."

— Chip Gliedman, analyst,
Giga Information Group,
Cambridge, Mass.

Citibank goes virtual

Citibank in New York inked a multiyear deal to use The Mining Co.'s "virtual community" model to electronically link its banking customers with product information and other people over the Internet. The Mining Co. is expected to spend four to six months developing a prototype of virtual communities around Citibank's products and services. It will use bulletin boards, chat rooms and electronic mail.

VA buys Alpha systems

The Department of Veterans Affairs is upgrading 100 medical centers with hospital information systems based on Digital Equipment Corp.'s Alpha chip. The \$26 million purchase is for clinical and administrative information systems. Each installation calls for as many as eight of Digital's AlphaServer 1000A systems and Open VMS clusters.

Sim software licensed

Chevron Research and Technology Co. signed a \$900,000 contract to license Pro/II software from Simulation Sciences, Inc. in Brea, Calif. The Windows-based software lets engineers simulate the flow of materials and energy through their company's plants.

Gartner report

Gartner Group, Inc. issued a report to help companies select external service providers. "Guidelines for Choosing and Negotiating with Consultants and Systems Integrators" can be purchased at www.gartner.com/hotc/esp0497.html.

Web helps firms go with the workflow

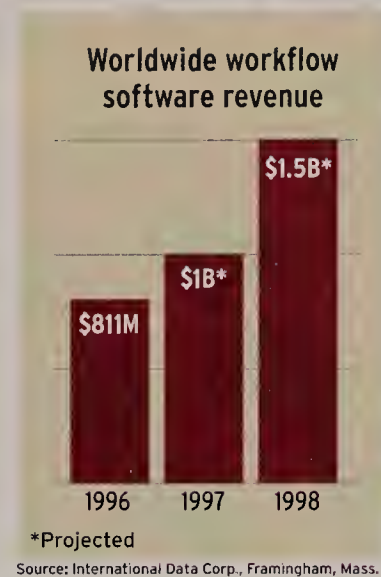
By Barb Cole-Gomolski

EVEN BEFORE IT had its first customers, a San Francisco-based medical services start-up had plans to implement workflow software.

HiLife, Inc. enrolls patients in classes, monitors their conditions and reports the results to physicians or medical groups. HiLife's business depends on taking information — entered by patients via the telephone or the World Wide Web — and moving it efficiently among nurses, doctors and patients.

"For us, workflow must exist across all our applications," said Jack Lakes, a senior staff engineer at HiLife, which hopes to eventually take its business nationwide. The company is prototyping applications that handle tasks such as routing nurses' time cards and enrolling patients.

HiLife is among a growing group of companies that want to make workflow a component of a wide breadth of applications. The push is fueled by the fact that sites now can overlay workflow on existing appli-



cations, such as accounting, order processing and messaging systems.

Workflow products, once rigid and lacking links to operational systems, now can be easily modified and integrated with

Workflow, page 42

CASE STUDY

Bank cashes in by merging IT systems

By Kim Girard

AS VACATIONERS lounged over Memorial Day weekend, Bank-Boston Corp.'s information systems staff was busy moving customer accounts to a merged system shared with newly acquired BayBank, Inc.

That meant consolidating the front-end customer transaction system and sales and service systems used by tellers, the accounting staff and the sales force, said Kevin Roden, direc-

Bank, page 42

Labor drought spurs flood of disaster outsourcing



Many Alabamians struggled in the wake of Hurricane Danny, but companies that outsourced data recovery stayed high and dry

TOM GILBERT

By Thomas Hoffman

WHEN HURRICANE DANNY whipped through the Gulf Coast late last month and dumped 30 inches of rain on Mobile, Ala., Robert Tuttle was dry and unfazed. The data processing manager at Mobile Gas Service Corp. could focus on the natural gas utility's operations without having to worry about power outages or floods disrupting his company's information systems.

Others were less fortunate, as the storm damaged about 500 homes and businesses in the area.

Disaster, page 42

FCC improves access via the 'net

► Public comment files to go online by year's end

By Sharon Machlis

WHEN A CONSUMER makes his opinion known to the FCC, a paper document usually has to be indexed and scanned into a 5-year-old imaging system.

But by year's end, the agency plans to launch a system that will let people file comments via a form on the World Wide Web. That system is expected to save staff time and offer the public

increased access and convenience.

The Electronic Comment Filing System also will have 1.2 million pages from its files available on the Internet in what officials at the Federal Communications Commission said could be the largest Sybase, Inc. database ever to be accessible to the public.

"We became enamored" with the Web's "ease of use and ease

Electronic Comment Filing System

Idea for project first conceived	Limited Quick Start prototype launches	System to go live
Jan. 1996	Feb. 1997	April 1997
	July/Aug. 1997	
Development work by outside contractors begins	Beta testing of full-scale system begins	

of reaching out to the public," said Sheryl Segal, information technology manager at the FCC.

In the short run, the system

should increase public participation in the comment-filing process, Segal said.

FCC, page 44

Disaster recovery gets outsourced

CONTINUED FROM PAGE 41

While other Mobile-area businesses struggled to keep their systems humming with skeletal IS crews, it was business as usual at Mobile Gas. The firm outsources its disaster recovery and planning functions to IBM under a three-site deal.

Although the utility didn't have to call on IBM during the storm, the arrangement helped Mobile Gas keep its head above water "and free up our staff to focus on day-to-day operations," Tuttle said.

The industrywide skills crunch is forcing IS crews

across the country to juggle multiple responsibilities. As a result, experts said, more organizations are beginning to outsource specific IS functions that historically have been retained in-house, such as disaster recovery planning.

Companies are under pressure to keep costs down and run their organizations with thin staffs. "But the workload doesn't go away, so it's necessary for them to outsource more of their IT functions," said Christopher Hoffman, an analyst at International Data Corp. in

AVERAGE FINANCIAL IMPACT OF COMPUTER DOWNTIME IN FOUR SECTORS

	Transportation	Financial	Retail	Entertainment
Business operation	Airline reservation centers	Retail brokerage	Catalog sales centers	Pay-per-view services
Hourly cost	\$89,500	\$6.45 million	\$90,000	\$150,000

Source: Contingency Planning Research, Inc., Livingston, N.J.

Framingham, Mass.

Several factors are contributing to an increase in disaster recovery outsourcing. In some cases, companies are outsourcing disaster recovery services instead of hiring a contingency planning expert and paying that person full benefits, said Lee Adler, president of Contingency Planning Research, Inc., a management consultancy in Livingston, N.J.

"It's also tough [for user organizations] to find qualified people," Adler said.

Lennox International, Inc. has managed to keep its disaster recovery planning in-house since its information services team "has pretty much stayed intact," said John G. Stevenson, vice president of information technology at the Dallas-based heating and air conditioning manufacturer.

But the company is collaborating more with its client/server hardware and software vendors, Stevenson said. Those vendors have detailed knowledge about how best to recover

their products in the wake of a disaster, he said.

The skills shortage has been a boon for services vendors. For example, Hewlett-Packard Co. just introduced a set of Windows NT recovery services, including a 24-hour hardware replacement service for HP and Intel Corp.-based equipment. Analysts said such services will be helpful to organizations whose NT environments are overseen by line managers with little to no contingency planning experience. □

BankBoston merges IT systems

CONTINUED FROM PAGE 41

tor of technology and deposit services at BankBoston, the merged company that employs 23,413 people worldwide and has assets of \$66 billion.

"The trick was to share data between the two of them" so bank employees could easily cross-check customer information, add services to an account or open accounts on one system, Roden said.

Employees at the premerger, corporate account-focused Bank of Boston worked on Pentium-based PCs with 32M bytes of RAM running IBM's OS/2 operating system. The PCs, distributed in numerous branches, talked to a central site over TCP/IP.

Meanwhile, BayBank, a consumer-focused bank known for its ubiquitous automatic teller machines (ATM), used an old NCR Corp. tower system and

ran a DOS-based teller system on the desktop. Tellers and salespeople accessed information from a mainframe.

One analyst said it cost between \$15 million to \$20 million to make the banks' systems work together, an amount that included investment in new servers and about 3,000 new PCs at BayBank branches and call centers. The PCs, installed during a four-month period before the Memorial Day conversion, replaced old AT&T Corp. 286-based machines, said Joe Paulantonio, BankBoston's senior delivery systems manager.

To get the two systems to share information, BankBoston converted BayBank to Argo Data Resource Corp.'s bank service tool that BankBoston tellers already used on the desktop. The banks use a cross-selling tool to access account information. The tool has been integrated to work with the Argo platform. BankBoston retained its OS/2 platform within the client/server environment.

BankBoston officials said the merger meant taking the best systems and products from each company. They kept BayBank's ATMs, technology and consumer banking offerings and retained Bank of Boston's operating system and hardware.

BankBoston officials wouldn't comment on any IS staff cuts made as a result of the merger, but analysts estimated that the average company will save up to

40% in information technology spending when acquiring another company. Often, though, the company spends any extra money to reinvest in new technology. For banks, those investments include improving ATMs, home banking technology and sales tools. BankBoston plans to invest some of its savings in preventing year 2000 computer glitches.

"I think in terms of basic systems, BankBoston is competitive with other banks in their arena," said Bob Landry, an analyst at The Tower Group in Newton, Mass. But BankBoston, like all banks that aim to stay competitive, must better identify its more profitable customers and decrease its per customer costs by taking advantage of technology such as ATMs, he said. ATMs, which are intended to cut bank expenses, typically cost the bank 40 cents per transaction, compared with the \$1.40 per teller transaction. □

Workflow

CONTINUED FROM PAGE 41

existing systems. And with hooks to Web browsers, it is more feasible to include a lot of workers, customers and suppliers in a workflow application, users said.

MANY USES

The payback is that workflow, which speeds up tasks, can be applied in areas such as manufacturing, purchasing and engineering change orders, users said.

For example, when a missile launcher on a U.S. Navy nuclear submarine needs repairs, a workflow application can deliver to engineers the information they need to develop a fast fix.

"We're trying to automate as much of the [repair] process as possible," said Bob Crowder, a consultant at Information Systems Professionals in Camarillo, Calif., which is helping to design the workflow application for naval bases in Bremerton, Wash., and Kings Bay, Ga. The

application will ride atop the Navy's Microsoft Corp. Exchange messaging system.

Until recently, there hasn't been an environment in which to build these widespread workflow applications, said Nathaniel Palmer, a senior consultant at Boston-based Delphi Consulting Group, Inc. But some clear models are emerging, he said.

For example, Nashua, N.H.-based Keyfile Corp. offers Keyflow, a workflow engine that works with Exchange and can be used to develop a series of workflow applications. And several companies have added Web hooks to their workflow engines, which lets companies turn workflow "on and off at the desktop," Palmer said.

Other user sites, such as Global Marine, an offshore drilling company in Houston, are turning to applications providers for workflow.

Jeff Musick, manager of desktop systems at Global, said the company plans to automate a time-sheet application when its applications vendor, PeopleSoft, Inc., beefs up its workflow support in its next release. □

BankBoston facts

- The company's network connects 473 branches and 1,522 ATMs in four New England states
- The leading bank for New England corporations and the region's only global bank
- 15th largest bank in the U.S.
- Assets of \$66.2 billion
- 23,413 employees worldwide

Report: Encryption policy hurts trade

By Elizabeth de Bony
BRUSSELS

U.S. CONTROLS on the export of encryption technology and telecommunications equipment represent significant barriers to international trade, the European Commission said in a report last week.

The development of digital communications has prompted the need for improved protection against the unauthorized use of personal data, trade secrets, banking information and databases. Without that protection, it is unlikely that electronic commerce will take off, said one European Commission official.

The commission's 13th annual "Report on United States Barriers to Trade and Investment" said the U.S. is the dominant supplier of key computing components, and the country's limitations on the export of strong encryption products hurts the growth of electronic commerce. □

De Bony writes for the IDG News Service in Brussels.

Break Through the Static With WebFOCUS.



**Use your corporate Web
to publish live data ...not static pages!**

Create Reports From Live Data!

Do you want to deploy serious information systems on your corporate intranet? Then give users access to live data...not static pages. How? With WebFOCUS, the ultimate data publishing system for the corporate Web.

With WebFOCUS you can:

- Publish live data from virtually any database on any computer platform
- Join and aggregate files from multiple databases on heterogeneous platforms
- Display fully formatted and styled reports with no more than a standard Web browser on the desktop
- Launch simple queries or create sophisticated ad hoc reports from your Web browser
- Automatically create dynamic hyperlinks so users can drill down on reports for more detailed information

World Leader In Enterprise Reporting

WebFOCUS is designed and supported by Information Builders, a world leader in enterprise reporting and analysis systems for more than 15 years.

Take a Test Drive!

For more information and a live demonstration of WebFOCUS, visit our Web site or call our toll-free number listed below.

CALL THE BUILDERS

**Information
Builders**

In Canada call (416) 364-2760

FOCUS and WebFOCUS are trademarks of Information Builders, Inc. New York, NY (212) 736-4433 E-mail: info@ibi.com

www.ibi.com
(800) 853-3170

FCC improves public access via the Web

CONTINUED FROM PAGE 41

run, the commission believes it will save staff time as more people send documents electronically.

Contractors from Dyncorp Information and Engineering Technology in Reston, Va., are converting 40G bytes of documents from the FCC's imaging system,

now in Tagged Image File Format, into Portable Document Format (PDF) for the Web. Beta testing is slated to begin within a month.

The system will use SPARC-based

hardware from Sun Microsystems, Inc., server software from Netscape Communications Corp., database software from Sybase and whichever browser is on the client machines that surf into the site, said John Soscia, an independent

contractor working with Dyncorp on the project.

Internet surfers won't have access to the actual core database, which will remain behind a firewall. Instead, the system will request a document copy from the database, which will be sent to the user.

PROMISES KEPT

With about two-thirds of the coding done, Soscia said the project's software tools are working as advertised — including Sybase's Web SQL to develop forms and Acrobat Capture 2.0 from Adobe Systems, Inc. in San Jose, Calif., to convert to PDF.

The big software challenge so far has been with Hypertext Markup Language (HTML) standards, he said. The agency needs a specialized HTML tag so the public can send and receive FCC forms and data. Although Netscape's Navigator recognizes this special tag, other browsers don't.

"For the public to send us a binary stream, we need that tag," Soscia said. He said his group is consulting with Microsoft on the matter. The tag is also pending before the Internet community as request-for-comment case No. 1867 from the Internet Engineering Task Force as a possible new standard. □

Computerworld Custom Publications

Where IT Leaders Find Technology Solutions

Computerworld's custom publications are an excellent resource for learning about specific solutions on critical technology issues and challenges. Sponsored by leading IT vendors, these custom publications are produced by a dedicated custom publishing staff at Computerworld. Working with well-known industry analysts from IDC, Gartner Group and other third party sources, this group brings you a variety of special publications that provide the focused perspectives that help you effectively deliver information technology to the enterprise.

For sponsorship information contact:

Elaine R. Offenbach

Vice President

Computerworld

Custom Publications

Phone: (415) 347-0555

Fax: (415) 347-8312

E-mail: elaine_offenbach@cw.com

COMPUTERWORLD



White Papers

With an in-depth focus on a major technology platform or technology management issue, Computerworld White Papers are highly regarded by information systems professionals

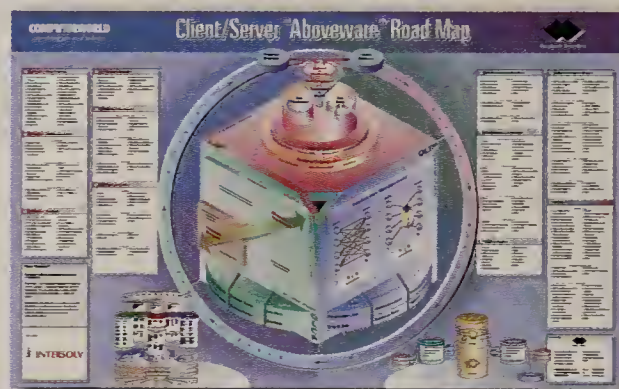
Custom Supplements

Technology briefings that provide strategic direction for the busy IT manager



Technology Roadmaps

Infographic reference guides to the design and implementation of critical technology platforms



Look for These Upcoming Custom Publications in Computerworld

Issue Date	Title	Space Close	Materials Due
Jul. 21	Supplement: Re-Engineering Financials	Jun. 6	Jun. 27
Aug. 11	Supplement: Cost of Ownership: Network Computers	Jun. 27	July 18
Sept. 8	Supplement: HR Online	July 25	Aug. 15
Sept. 29	White Paper: Remote Access	Aug. 15	Sept. 5
	Distribution at SIM Fall Conference & Network + Interop		

Computerworld Custom Publications are written and produced independently of the Computerworld editorial staff.

To order back issues, contact Heidi Broadley at (508) 820-8536

Filipinos train coders to tackle year 2000

By Glenda G. Venturanza
MANILA

A \$122 MILLION government drive to train programmers to fix the year 2000 bug was scheduled to produce its first graduates last month.

William Padolina, the Philippines secretary of science and technology, said the program will help local software companies develop the skills needed to meet international demand for year 2000 conversion services. The goal of the project is to train 100,000 programmers in the next year so Filipino companies can capture a percentage of the worldwide market for conversion services.

The first batch of programmers underwent two and a half months of training at the Asia Pacific College using a curriculum that includes Cobol. The curriculum was worked out by the three software houses that will hire the graduates. Padolina declined to identify the firms.

Johnny Sy, general manager at First Philippine Software Corp., said the \$1,220 budget for each person is "cheap" compared with the money needed to find the experienced skills. He said the money will go to the training institution and the trainee's allowance.

Sy said the first group won't reach the 100-person target. "We expect that not all of them will be selected," Sy said. "Right now, there are already dropouts." □

Venturanza writes for Computerworld Philippines.

Only One **Web** Application Tool Thrives in the **Toughest Terrain.**

CACTUS

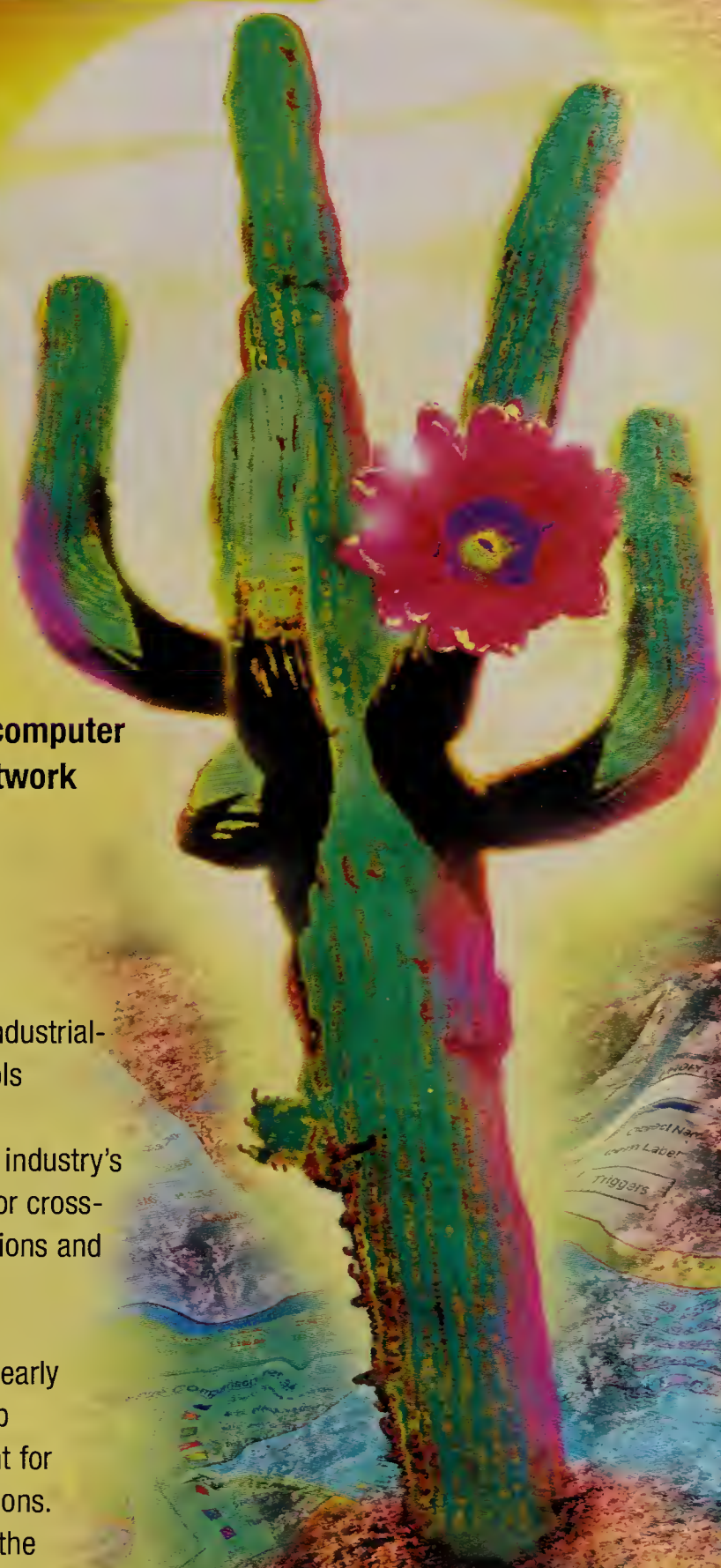
Most of today's Web application development tools can't handle the forbidding enterprise landscape of disparate computer platforms, database structures, security systems, and network architectures. Cactus can.

Cactus offers:

- The ability to access and update all RDBMSs as well as mainframe legacy data for true enterprise-class applications
- Easy-to-use visual 4GL workbench – requires no 3GL programming resources
- Full support for Java, ActiveX controls, and all popular scripting languages
- Choice of deployment options – client/server or Web

- Complete, integrated package...includes industrial-strength reporting tools
- Tight integration with industry's leading middleware for cross-platform communications and security

Find out why Cactus is clearly superior to any other Web development environment for enterprise-class applications. Visit our Web site or call the toll-free number listed below.



CALL THE BUILDERS

**Information
Builders**

www.ibl.com
(800) 868-1090

In Canada, call (416) 364-2760

Cactus is a trademark of Information Builders, Inc. New York, NY.

**Eats
Transactions
For Lunch**

10,665

tpmC™

**World's Fastest Intel®-based,
Windows® NT Server**



TOP (tpmC) Intel-Architecture Systems*					
Rank	Manuf.	System	Throughput (tpmC)	Price/Performance (\$per tpmC)	Qty/Processors/MHz
1	ALR®	Revolution™ 6x6 c/s	10,665.53	\$48	6/Pentium Pro/200MHz
1	Unisys®	Aquanta™ HS/6 c/s	10,665.53	\$55	6/Pentium Pro/200MHz
2	HP®	NetServer™ LX Pro c/s	9,198.00	\$50	4/Pentium Pro/200MHz
3	NCR®	WorldMark™ 4300S c/s	9,116.00	\$86	4/Pentium Pro/200MHz
4	Compaq®	ProLiant™ 6000 6/200 Model 1X c/s	9,028.67	\$79	4/Pentium Pro/200MHz
5	Compaq®	ProLiant™ 5000 6/200 Model 2 c/s	8,311.43	\$79	4/Pentium Pro/200MHz
6	Digital®	Prioris™ ZX 6200MP	8,145.60	\$49	4/Pentium Pro/200MHz
7	Compaq®	ProLiant™ 5000 6/200 Model 1X c/s	8,070.00	\$58	4/Pentium Pro/200MHz
8	HP®	NetServer™ LX Pro c/s	8,028.00	\$73	4/Pentium Pro/200MHz

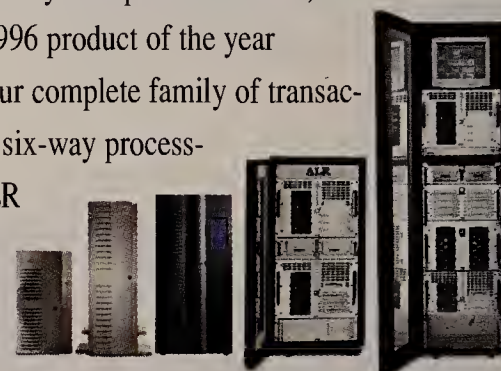
Product comparison chart below is not representative of the machines used in these benchmarks. * Data current on 7/9/97. tpmC, TPC-C and TPC are trademarks of the Transaction Processing Performance Council.



ALR's Revolution 6X6, the industry's first server to feature a total of 6 Intel Pentium Pro processors.

The ALR® Revolution™ 6X6

It's official! The ALR Revolution 6X6 has shattered all previous TPC-C performance records to earn its place as the fastest Intel-based server in the world. But what else would you expect from ALR, winner of both *InfoWorld* and *UnixReview*'s 1996 product of the year awards? To learn more about our complete family of transaction munching dual, quad, and six-way processing servers, visit your local ALR reseller today or call our toll-free number today.



	ALR Revolution 2X™	ALR Revolution 6X6™	Compaq ProLiant™ 6000
CPU	(1) Pentium II 266/512	(1) Pentium® Pro 200/512	(1) Pentium® Pro 200/512
Maximum No. of Processors	2 (Pentium Pro or Pentium II)	6	4
Memory	32-MB	128-MB	128-MB
Hard Disk Drive Storage	5-Gigabyte (IDE)	9-Gigabyte (FWSCSI)	9-Gigabyte (FWSCSI)
LCD Touchscreen Diagnostics	Not Available	Standard	Not Available
CD-ROM	16X (IDE)	16X (SCSI)	8X (SCSI)
RAID Ready	Optional	6 Bays	6 Bays
Hot Swappable Expansion	Optional	6 Bays (1.6)	6 Bays (1.6)
Network Interface	10/100 Ethernet	10/100 Ethernet	10/100 Ethernet
On-board Disk Controller	Dual IDE & Ultra Wide SCSI	Fast/Wide Ultra SCSI	Fast/Wide Ultra SCSI
Server Management	ALR InforManager™ with Active CPR™	ALR InforManager™ with ActiveCPR™	Compaq Insight Manager™
Power Supply	325 Watts	700 Watts (1050 opt.)	750 Watts
Redundant Hot-pluggable N+1	Not Available	Standard	Optional
On-site Service	1 Years On-site Service	3 Years On-site Service	3 Years On-site Service
Factory Warranty	5 Year/36 Month	5 Year/36 Month	3 Year
IDC Estimated Street Price	3,085	12,763	13,431

1-800-444-4ALR
<http://www.alr.com>

ALR®
Advanced Logic Research, Inc.

New from ALR... Autobahn ISDN Routers now available for under \$650, call 1-888-ALR-ISDN

The Internet

Electronic Commerce ♦ The World Wide Web ♦ Intranets

Briefs

Internet kiosk

Atcom/Info in San Diego plans today to introduce an Internet kiosk designed to fit into a standard telephone booth. Internet kiosks are used in airports, convention centers, hotel lobbies and other public places as a way to check electronic mail and the World Wide Web while on the road. Existing Internet kiosks are large, freestanding structures. The model from Atcom/Info was designed to be less conspicuous.

Web preview tool

NetMetrics Corp. has announced WebTurbo, a tool designed to allow users to preview Web pages before downloading them. The preview summarizes a page, allowing users to get a sense of what the page is about before downloading the full text and graphics.

The software is free but comes with advertising displays sold by NetMetrics. The tool works as a plug-in for Netscape Communications Corp.'s Navigator or Microsoft Corp.'s Internet Explorer clients. It is available at www.webturbo.com.

Censoring E-mail

Security Systems, Inc. in Sugar Grove, Ill., today plans to introduce software that censors incoming and outgoing E-mail, Web pages and Windows documents such as spreadsheets and word processing texts. Cyber Sentinel was designed primarily to screen out pornography, but can also be used to control distribution of credit-card numbers and proprietary corporate information. The software uses built-in libraries of objectionable phrases that users can define.

The software can warn users when it encounters objectionable material or can be set to operate in "stealth mode," in which it simply logs inappropriate content to a database.

Spiegel learns by trial and error

By Kim S. Nash
DOWNERS GROVE, ILL.

THE MAD WEB SCIENTISTS at Spiegel, Inc. have spent more than two years experimenting with electronic commerce, trying different advertising schemes, design ideas and merchandise mixes.

Now they are ready to make money.

An all-volunteer staff — which has ranged from two to 20 people over the past two years — launched Spiegel's first online store in February 1995. But the World Wide Web team only last month got its first official full-time employee. A redesigned version of the site was slated to appear last Friday.

Most of the skunkworks group of technical, marketing, advertising and other employees

will continue to squeeze online projects in between their formal duties at the 90-year-old paper catalog. Spiegel peddles everything from chic designer suits to low-priced denim shorts, plus

housewares.

But a first-ever formal business plan submitted to management late last month means that www.spiegel.com will finally get financial backing.

The biggest lesson in all this trial and error? E-commerce demands enormous patience.

"You've got to go ahead and try different things to know what works. If we just sat here, we wouldn't have known a thing about how to make a Web site work, but now we do," said Randy Heiple, division vice president of catalog advertising production.

Don't misunderstand. Spiegel



The fastest-moving merchandise sold on the Web has been items customers know well such as bed linens, shoes and underwear.

— Barbara Vaughn,
Spiegel, Inc.

KEVIN O'MOONEY

is no Dell Computer Corp., whose site does \$1 million worth of business per day. But the cataloger does expect to pull down a profit for fiscal 1998, Heiple said. (Officials declined to say how much.)

But the fact that Spiegel has stayed up and running this long and continues to take in sales is a feat compared with the many

Spiegel, page 48

IS not jumpy about bugs in browsers

By Carol Sliwa

ARE YOU GETTING the impression that a new browser bug is discovered just about every week?

Although some information systems managers are starting to feel that way, they aren't exactly pressing the panic button and ripping out the troublesome clients in response.

"I haven't seen a patch yet that's an earthshaking patch," said Louis Dumser, manager of communication application technologies at UniHealth, a Burbank, Calif.-based holding company for hospitals, medical groups, insurance companies and home health care organizations.

FIREWALL-PROTECTED

Given the way his company uses browsers, Dumser isn't overly concerned about bugs. Employees can access some company information over an intranet, but it is behind a firewall in a protected internal network. And sensitive data isn't being transmitted over the Internet, he said.

The latest browser bug, affecting the new Communicator client from Netscape Communications Corp., is behind a lava browser bugs, page 48

Extranet aids in insurance sales

By Mitch Wagner

IN AN INDUSTRY that has been reluctant to adopt Internet technology, Allmerica Financial Corp. is taking the lead with a three-state extranet to help business partner First of America Bank Corp. sell Allmerica insurance.

Bank-employed sales agents at 600 First of America branches in Michigan, Illinois and Indiana dial in to Allmerica servers over the Internet to receive updated information on insurance rates and terms and to sign up sales prospects for insurance.

About 60 agents use the extranet, which was launched in May, and that number is expected to increase to about 125 by year's end.

"What we're getting out of this is the ability to manage our

sales force more effectively," said Richard H. Phillips, a vice president at First of America Insurance Group, a unit of First of America in Kalamazoo, Mich. "If you send them out the information on a disk, they just throw it into a desk drawer until it's too late. But if the application is loaded



"We had a business need to be able to provide information to remote agents connected to banks."

— John Peterson,
Allmerica

on the Internet, they're always dealing with the most current information."

The extranet project was conceived in January by Worcester, Mass.-based Allmerica as a means of getting closer to customers. Consumers usually don't seek out insurance information, and salespeople have difficulty arranging meetings with prospects to sell them insurance.

The goal for Allmerica was to put sales information, stored on Oracle Corp. databases that run on Sun Microsystems, Inc. servers, into places where people are already thinking about finance — such as banks, said John Peterson, an electronic-commerce staff member at Allmerica and an information systems manager involved in setting up the project.

"We had a business need to be able to provide information and transactional capability to remote agents that are connected to banks," Peterson said.

Agents can receive online training in using the system Extranet, page 48

Browser bugs

CONTINUED FROM PAGE 47

applet to transmit an end user's Internet activities to the point of picking up any personal data they transmit to a World Wide Web site. A tiny browser launches when the user hits the malicious Web site, and the nearly invisible browser stays active when the user visits other sites (see chart).

Earlier last month, a JavaScript flaw permitted a Web author to do similar user tracking in Communicator, Navigator 2.x and 3.x and Microsoft Corp.'s Internet Explorer 3.x browser and 4.0 platform preview.

Other bugs have allowed Web site operators to access some files on a user's hard drive, but operators with ill intent typically have to have sophisticated knowledge, such as the name and location of a user's file.

"If you read Netscape's take on it, there are no documented

cases where these have actually been exploited. So the risk is small in my view," said Glenn Newell, senior engineering manager of intranet technology at National Semiconductor Corp. in Santa Clara, Calif.

In a worst-case scenario, Newell said he can envision preventing employees from using their browsers outside the firewall. But that's hard to imagine, he said.

GETTING THE WORD OUT

For the current rash of bugs, National Semiconductor keeps its users informed through postings to an internal newsgroup and listserver.

Schlumberger Ltd., an international oil field services and manufacturing company, takes a similar approach. Information about serious bugs is blasted out via electronic mail. Schlumberger's employees install their

RECENT BROWSER BUGS			
	Problem	Affected software	Recommended fix
Singapore Privacy Bug	A malicious Java applet that runs in a tiny browser can transmit a user's Web activity	Communicator 4.x	Communicator 4.02
Bell Labs Privacy Bug	Using JavaScript, a Web site author can operate a tiny browser that monitors a user's Internet activities	Navigator 2.x and 3.x, Communicator 4.01, Internet Explorer 3.x and Internet Explorer 4.0 Platform Preview 1	Navigator 3.02, Communicator 4.01A, Internet Explorer 3.02 and Internet Explorer 4.0 Platform Preview 2
Danish Privacy Bug	Web site operators can access files on a user's hard drive if the operator knows the names and locations of files	Navigator 2.x and 3.x and Communicator 4.0	Navigator 3.02 and Communicator 4.01

own browsers, so they must download bug fixes themselves if they think they need them, said David Sims, Schlumberger's technical manager for information technology.

"Left to their own initiatives, people want to do the right thing," Sims said. "So if you make them aware of the inherent risks, then they'll behave

properly. If someone doesn't pay attention and it wipes out their disk, they'll learn."

Sims, who works at Schlumberger's Sugar Land, Texas, office, said he keeps a "virtual head count" of employees who enjoy helping others. Those employees, spread throughout the company's divisions worldwide, tend to assist other employees

who experience difficulty.

Most Schlumberger users have been told to disable Java in their browsers, for instance.

"Historically, there have been issues with Java," Sims said. "We don't have a lot of internal Java applications, so it doesn't do anything to turn Java off. As problems are resolved, we tell them the problem's resolved." □

Spiegel's E-commerce

CONTINUED FROM PAGE 47

online commerce sites that have folded in the past three years.

"To date, mere survival has been the most used measure of success," said David Strom, president of David Strom, Inc., a consulting firm in Port Washington, N.Y.

Much of the credit goes to an adventurous attitude.

Take advertising. Spiegel's first ads were in print, in *The Wall Street Journal* and *Yahoo Internet Life* magazine. Online spots soon followed on the Web sites for Women's Wire, Netscape Communications Corp. and Excite, Inc.'s search engine.

What worked and what flopped surprised Spiegel.

"The number of people going from surfer to buyer from Netscape was zero," Heiple said. Spiegel soon withdrew banners from Netscape's site.

But ads on Women's Wire (www.women.com), a Web page and forum dedicated to women, drew sales.

Still, Spiegel's virtually all-female customer base may be a liability because Internet users are mainly men, according to Mary Meeker, an analyst at New York brokerage firm Morgan Stanley & Co.

And apparel sites have been slower to spark sales than those

for books, music and computer products, Meeker said. That is partially because online graphics don't look as nice as, say, pictures in paper catalogs.

Some design techniques used in the paper catalog don't translate to Web pages. The paper version, for example, uses two-page spreads to show a whole bedroom scene, where several items depicted are for sale.

"But putting a bedroom in a 2-in. window on screen wouldn't be easy," said Barbara Vaughan, who, as Internet sites manager, became Spiegel's first permanent Web worker last month.

Such an image would look cramped and busy. So the items Spiegel offers online are generally pictured by themselves — a model wearing a dress, a pair of shoes floating in space.

So far, the fastest-moving merchandise has been items customers know well. Bed linens, shoes and underwear, for example, come in standard sizes and materials that customers are familiar with.

Spiegel also has learned to tiptoe around the wishes of some of its manufacturers. A large West Coast computer and video game maker, for example, doesn't want its products promoted at Spiegel's site because

it wants any online buyers to come to its own home page.

Others, Vaughan said, don't want their products on the Web at all.

"They don't want [customers from] other countries knowing what the things are selling for in the U.S.," she said.

Elsewhere, old information propagated by search engines has been a problem. Yahoo,

Inc., for example, doesn't refresh its databases of Web page addresses as often as Spiegel changes its site. Therefore, Yahoo users can frequently turn up dead Spiegel links, said James Summers, electronic publishing systems manager.

The cataloger has met with Yahoo officials and others to urge them to "spider," or search and collect, Web page addresses

more often, but no formal agreements have been signed.

Next on Spiegel's list of ideas is interactive help. Confused users could call for a box to pop up that would let them do text-based chat with sales agents.

Early tests indicate that the system would be less expensive than telephone conversations because the chats tend to be shorter, Heiple said. □

Extranet aids in sales

CONTINUED FROM PAGE 47

through Internet audio connectivity using RealAudio from Progressive Networks, Inc. in Seattle.

The First of America agents sell a variety of consumer insurance products, including auto, home, term life and extended care, both to individuals and to corporations on behalf of their employees, Peterson said.

By using the Internet to empower sales agents, Allmerica has bypassed one of the chief obstacles that has kept insurance companies off-line, said David Weisman, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Insurance companies have been reluctant to set up Internet connections to sell insurance directly for fear of competing with the insurance agents who sell their products.

"A lot of insurance compa-

nies are held captive by the agents. The only relationship that exists is between the customer and the agents rather than the customer and the insurance company," Weisman said.

Only 18% of insurance firms offer policy approvals online or plan to do so within a year, according to an April report from Forrester, which surveyed 50 top insurance companies. About 44% said they don't plan to offer online policy approvals within three years — or ever.

Security was a major concern for the extranet. "We're a bank, and people are trusting us with their personal information," Phillips said. "Any problem with Internet security is a reflection on the bank."

Agents access the system using a belt-and-suspenders double-protection scheme —

conventional password protection, combined with digital certificate technology, a kind of software-based authentication system from VeriSign, Inc. in Mountain View, Calif., Phillips said. Data moving over the Internet is encrypted using Secure Sockets Layer encryption from Netscape Communications Corp.

The extranet is part of the larger project of letting agents at banks sell insurance for Allmerica. Return on investment will be measured for the overall project rather than for the extranet project alone.

The first benchmark will come this fall, when Allmerica will look at overall revenue brought in and measurements of how interested potential customers appear to be — how many times agents request price quotes, applications and needs analyses, Peterson said.

He wouldn't provide specifics on the cost of the project or expected revenue. □

August 1997

NORTH AMERICA

APC
AMERICAN POWER CONVERSION

The World's Most Reliable Power Protection News

Currents

Summer

HOW SAFE IS

Storms

YOUR NETWORK?

Are Here!

Protect
ME!



**Win a Weekend
Getaway!** See page 18

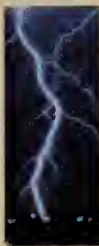
Inside This Issue

Power News1, 8-9, 16

Beware of the network threat of planned outages and summer storms!



complete nodes
rotection solution:
Back-UPS Pro®



Rave Reviews3



CRN says:
"Resell APC's
PowerAudit™ to
increase net-
work uptime
and reliability."

Awards6

"Symmetra™ Power Array™ ener-
gizes the high-end UPS arena."



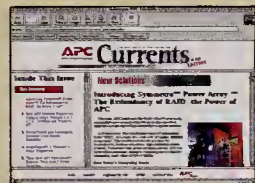
New Solutions2, 7, 10

Web News12

ProtectMe!™ with APC News...13

APC in Action14-15

APC Smart-UPS® protects a volcanic
production in Hollywood.



Check out
PowerNews™ at
<http://www.apcc.com/english/powernews/currents>

How to Contact APC

APC North America

Corporate Headquarters
132 Fairgrounds Road
West Kingstown, RI 02892
Phone: 888-289-2722, ext. 8182
Fax: 401-789-3710
E-mail: apcinfo@apcc.com
Compuserve: GO APCSUPPORT
PowerFax: 800-347-FAXX

APC Europe

APC European Headquarters
APC Ireland
Ballybrit Business Park
Galway, Ireland
Phone: (+35)391 702000
Fax: (+35)391 756909

APC France
Phone: +33 1 64 62 59 00
Fax: +33 1 60 17 80 29

APC Balkans
Phone: +33 1 64625926
Fax: +33 1 60176551

APC Benelux
Phone: +31 183 628 898
Fax: +31 183 628 821

APC Czech & Slovak Republic
Phone: +42 2 683 7845
Fax: +42 2 683 7680

APC Germany
Phone: +49 89 51417-450
Fax: +49 89 951417-100

APC Hungary
Phone: +36 1 2696433
Fax: +36 1 2696433

APC Italy
Phone: +39 229 40 55 08
Fax: +39 2 29 40 55 15

APC Nordic
Phone: +46 8 6429710
Fax: +46 8 6424727

APC Poland
Phone: +48 22 6211050
Fax: +48 22 6217175

APC Russia - Moscow
Phone: (+7 095) 929 90 95
Fax: (+7 095) 929 91 80

APC Spain
Phone: +34 3 4127125;
+34 3 3180133
Fax: +34 3 4127125;
+34 3 3177646

APC UK
Phone: +44 1 753 511022
Fax: +44 1 753 511033
Technical support: 0800 132 990

APC Latin America

APC Latin America Headquarters
132 Fairgrounds Road
West Kingstown, RI 02892
Phone: 401-789-5735
Fax: 401-788-2739
WEB: <http://www.apcc.com>
E-mail: apcinlam@apcc.com

APC Argentina
Toll free number: 0800-827-22

APC Brazil
Toll free number: 0-800-12-72-21

APC Colombia
Toll free number: 980-15-39-47

APC Mexico
Toll free number: 95-800-804-42-83

APC Uruguay
Toll free number: 000-413-598-21-39

APC Venezuela
Toll free number: 800-128-56

APC Africa

APC South Africa
Phone: +27 11 465 5268
Fax: +27 11 465 4604

APC Middle East

APC Middle East
Phone: +44 181 769 1963
Fax: +44 181 769 1963

APC Asia Pacific

Asia Pacific Headquarters
APC Australia™
Phone: +61-2-9955-9366
Fax: +61-2-9955-2844
Level 4, 20 Berry Street
North Sydney
NSW2076 Sydney, Australia

APC China
Phone: +86-10-6261-5868
Fax: +86-10-6261-5861

APC India
Phone: +91-44-433-1124
Fax: +91-44-434-1464

APC Indonesia
Phone: +6221-650-0813
Fax: +6221-650-7427

APC Japan
Phone: (+81)3 3798 3888
Fax: (+81)3 3798 3880

APC Korea
Phone: +82-2-501-6492
Fax: +82-2-501-6369

APC Malaysia
Phone: +603-735-8870
Fax: +603-732-9069

APC Philippines
Phone: +63-261-5023
Fax: +63-261-5023

APC Singapore
Phone: +65-337-4462
Fax: +65-337-2774

APC Taiwan
Phone: +886-2-707-0410
Fax: +886-2-707-0410

APC Thailand
Phone: +662-719-2228
Fax: +662-719-2229

APC Turkey
Phone: +90 212 230 7156
Fax: +90 212 230 7113

APC AMERICAN POWER CONVERSION **Currents™**
The World's Most Reliable Power Protection News

Editor: **Chris Carroll**
Art Director: **Philip Hawthorne**
Writer: **Russell Desjarlais**
Design: **Samantha Lipeles,**
Cheri LaQuerre
APC in Action: **Martha Badigian**

We love to hear your feedback: Please send com-
ments and questions about Currents to:

American Power Conversion
Attn: **APC Currents**
132 Fairgrounds Road
West Kingstown, RI 02892
Fax: 401-789-3710
Phone: 888-289-2722 ext. 8182
E-mail: apccurrents@apcc.com

APC Currents is published four times a year by American
Power Conversion. All pricing is in U.S. dollars, and
subject to change without notice.

Subscription Orders / Address Changes

Subscriptions are free of charge. For subscription, send
your name, complete address (including country), and
phone number to **APC Currents, 132 Fairgrounds
Road, West Kingston, RI 02892, USA. Phone:**
401-789-5735 Fax to the attention of APC
Currents: 401-788-3710.

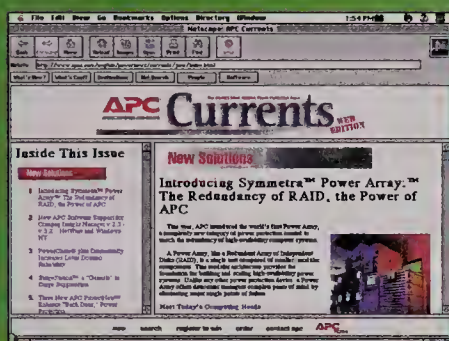
Reprint Information

Please contact Chris Carroll at APC, 132 Fairgrounds
Road, West Kingston, RI 02892 USA for information
and reprint costs. E-mail: apccurrents@apcc.com
American Power Conversion is a publicly held corpo-
ration (NASDAQ: APCC).

APC Currents, Symmetra, Power Array, MasterSwitch,
PowerView, SurgeArrest, SurgeStation, Back-UPS,
Back-UPS Pro, Back-UPS Office, Smart-UPS, Smart-UPS
v/s, Matrix-UPS, NetShelter, Call-UPS II, Share-UPS,
Measure-UPS, PowerChute plus, Power Manager,
PowerDoctor, PowerAudit, WebAgent, WebAlert,
PowerShield, Protect ME! with APC, ProtectNet,
SmartSlot, QuickSwap, CellGuard, SmartTrim,
SmartBoost, Line-R, PowerNet, Lifetime Equipment
Protection Policy, Control-UPS/400, PowerPage and
Double-UP are APC trademarks and property of APC.
Others are property of their owners.

APC®
AMERICAN POWER CONVERSION

Extra!



Introducing APC Currents Web Edition

Check it out on our
PowerPage™ under
Promos and Free Stuff.

Special Offers

Back-UPS® Office™
\$30 Off &
FREE SmartSlot™
Accessory
See page 17

WIN!

Is Your APC UPS
the World's Most
Reliable? Win a
Vacation for Two!
See page 19

Watch for APC on TV!

If you see an APC commercial on TV this summer, E-mail us at tv@apcc.com, tell us where and when, and we'll send you an APC coffee mug.



Now You Can
Download the
PowerChute®*plus*
Upgrades Directly
From the Internet:
<http://www.apcc.com/english/prods/sware/upgrd>

Power Companies Warn Users: "Beware of Summer Blackouts."

Most of the time electrical problems hit when you least expect them. But what if you were notified in advance? You may have enough time to shut down your essential electronics, or at least plan and implement a solution that will eliminate the threat of hardware damage and data loss due to power problems. This summer, utility companies nationwide are giving network administrators and computer users just that kind of warning. But is a warning enough? What happens to your business when the power is out?

The Coming Shortage

As the power industry gears up for expected summertime brownouts (resulting from increased power demand), lightning storms and various seasonal anomalies, a new threat to network computing has appeared on the horizon: planned power outages due to the expected power shortages.

According to *Electric Utility Week* (May 5), Upper Midwest utilities are "reactivating mothballed power plants, scrambling to implement transmission reinforcement projects, and attempting to secure generation and transmission capacity from neighboring utilities in an effort to head off possible power shortages this summer."

Although industry experts like the North American Electric Reliability Council have predicted such shortages for more than a year (see APC Currents, June p.8), the immensity of the problem combined with the volatility of recent deregulation in the utility industry has left few options besides this desperate scramble for surplus power and planned outages.

On April 10, Wisconsin utilities warned that with about one-third of the nuclear generating capacity in Wisconsin and the Upper Midwest temporarily out of service, the region could be facing electricity supply shortages over the next six months.

Illinois faces the same predicament. On April 28, Illinois Power reported that it would restart three mothballed Wood River natural-gas-fired units. Commonwealth Edison Co, Chicago, Ill, is seeking industrial and commercial customers with their own dormant generators that may help ease some of their load. The company is intensifying infrared fly-overs, looking for hot spots on its transmission system that need to be repaired or replaced.

It's The Same All Over

The outlook is the same in other parts of the country as well. According to the Summer Summary of the New England Power Pool (NEPOOL), a consortium of that region's electric

utilities, "Hot and humid summer days in New England can create the highest peak electric demands of the year, and often, these demands can put a strain on electricity suppliers."

NEPOOL reports in its summary that due to four of the region's biggest power plants being off line; three nuclear plants at Millstone Point, Connecticut and the Maine Yankee nuclear power plant, "New England utilities are taking aggressive steps to either generate additional power or conserve existing resources."

New England utilities are also proposing the reactivation of a number of "mothballed" generating units, much like their Midwestern counterparts. In addition, NEPOOL suggests in its summary that customers "conserve energy and...use their own emergency generation, reduce usage or shut down operations as needed."

What does this mean for computer users? Well, if even if you have your own power generating facility to produce electricity for your company, you will still need instantaneous battery back-up power protection to ride through brownouts and to bridge the gap before generators kick in. Without that bridge, your systems will certainly crash, corrupting data and possibly damaging hardware. Most businesses, however, except hospitals and the utilities themselves, don't have any generating systems in place. Dependence on the utility for electricity is virtually universal.

If the power companies can't reactivate enough closed and costly power plants, or scrape up sufficient surplus power from other regions, the summer could prove disastrous for any business that depends on computing to generate revenue, serve customers or manage operations.

According to the New England Power Pool summary, "Although all of these efforts are aimed at avoiding capacity shortages, ...NEPOOL might have to resort to voltage reductions, public appeals for customer load curtailment or power interruptions in order to meet demand. When feasible, warning of interruptions will be given."

Of course, warning will not always be provided, leaving network administrators and power customers with one more threat to their business, not to mention their peace of mind.

The only solution to the grim reality of US power capacity problems is to be sure your networks are protected by premium power protection. Such protection has become a necessity in an environment where lost power can often mean a lost business (see related story, page 12).

"NEPOOL might have to resort to voltage reductions, public appeals for customer load curtailment or power interruptions in order to meet demand. When feasible, warning of interruptions will be given,"

-Summer Summary of the New England Power Pool (NEPOOL)



APC SurgeStation™ Unveiled at Spring COMDEX, Promises Summertime Peace of Mind

In the past five years APC has sold over 4,000,000 surge suppressors. They have been praised for their reliability and effectiveness in the field, and have saved untold millions of dollars of computer and peripheral equipment from surge and lightning damage.

The SurgeStation, APC's latest offering, accepts the challenge issued by APC customers to incorporate several "dream features" while maintaining the key elements and high-performance that make SurgeArrest the most reliable and one of the best selling surge suppressors in the world.

Months of intensive design work were spent to bring you the newest generation of SurgeArrest: APC SurgeStation. The development project, code named Genesis, was a revelation in surge suppressor design. The finished product, introduced in June at the Spring COMDEX trade show, offers several unique features and benefits.

All the Features You Wanted

The SurgeStation products have eight outlets, including three outlets spaced to handle transformer blocks easily, and two "always on" outlets for convenience. The new building wiring-fault indicator, located at the base of the power cord, clarifies the meaning of the indicator and allows you to diagnose mis-wiring as



Your "Dream" Features:

"I want to plug transformer blocks without covering up any other outlets."

"I need more outlets for peripherals."

"I want to plug a telephone line and a modem dataline into the same surge protector."

"A switch easier to turn on and harder to turn off."

"Give me a right angle plug so I can move my desk back against the wall."

"I need some outlets that are always on."

"Can you help organize all these cords?"

APC Listened!

For details about how to save your computer and peripherals from lightning and other power anomalies with APC SurgeArrest SurgeStation, call 888-289-2722, ext. 8182.

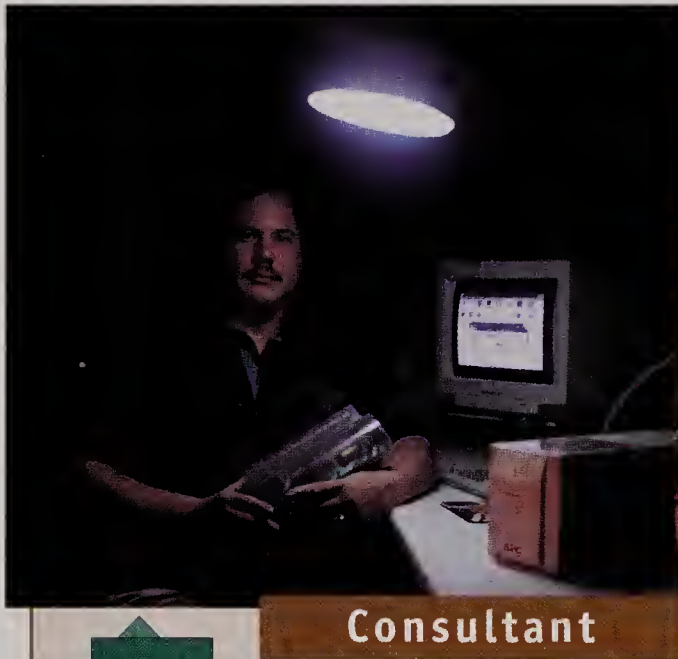
soon as the unit is plugged in. As if those features weren't enough, we also added a right-angle plug to help maximize your work space, and a switch large enough to be pressed with your foot, but recessed enough to prevent an accidental turn-off. Finally, the SurgeStation includes cord-management straps and holders which let you wrap up and organize excess or unruly power cords.

To resolve the challenge of protecting more than one dataline, SurgeStation models are available with protection for multiple telephone lines, telephone and cable/DSS protection, or telephone and network protection (10BaseT, 100BaseT, and Token Ring), all within a single surge suppressor. The SurgeStation can be easily mounted on the wall, or fit on or under your desk or workspace.

Lifetime Equipment Protection Insurance



SurgeStation joins APC's SurgeArrest Professional, Performance and Network product families, and comes with up to \$25,000 of lifetime insurance against surge damage to properly connected equipment (US and Canada only. See policy for details.)



Joe Brickler
JTB Office Automation Consultants
Cincinnati, OH

"APC Makes a Major Difference in Keeping Your Equipment From Being on an Insurance List."

"JTB Office Automation Consultants resells, repairs, installs networks, and writes customer software, in addition to being an ISP. This story starts the Friday before the flood of the Ohio Valley- where we are located. Winds were very heavy on that day, and caused a power outage.

"Since it was 6:00 P.M. I decided to go home where I could work on another project only to find my computer down at home. First, thinking the computer was broken, I checked the PC, then the breaker box, then finally my APC SurgeArrest. I pulled the SurgeArrest out from the desk to find out it was blown. It was a clear unit and since it was clear, you could see exactly where it had blown. I was very relieved that my PC survived.

Later that night my stepdaughter asked me what the strange smell was in the house. After

looking around I found the surge had hit the Brand C protector (C meaning Cheap). I found the television in the living room was fried and the cable box controller was melted with a black char leaving burns all over the steel converter box. A police officer later told me that two doors down, a cable box actually caught on fire. I'm lucky nothing was wrong with my PC - thanks to the APC SurgeArrest.

I have been in the business since 1986 and never paid that much attention to brand of surge suppressors. Now I know that APC makes a major difference in keeping your equipment from being on an insurance list. Now at JTB, every computer sold will have a APC SurgeArrest or no warranty, and that's final. I'll give it to them if I have to. There is no compromise."

CRN: "Increase Network Uptime, Reliability." with APC's PowerAudit™

Computer Reseller News

Building or reconfiguring an entire network can be one of the greatest challenges a network administrator faces. Often, meeting the challenge means bringing in the support of an expert who knows the ins and outs of both your current and future system. Now, APC PowerAudit gives you a new service tool to ensure your network transition goes smoothly if not according to plan, and *Computer Reseller News* has found that the service means "increased network uptime and reliability."

APC's PowerAudit helps prevent costly network or system failures by providing a comprehensive overview of your network's current electrical environment and by designing custom, detailed and bulletproofing strategies for critical equipment.

APC PowerAudit engineers make recommendations to bring your site up to IEEE, computer-grade power standards and down from the dangerous precipice of bad power.

PowerAudit provides a fail-safe way for corporations to build an excellent network founda-

tion, no matter how unreliable the utility power is.

Why is a PowerAudit so important? According to Casey Ives, managing director for Intelligent Electronics, "Hardware and software partners have done a great job increasing network availability. Power is the last frontier in network availability."

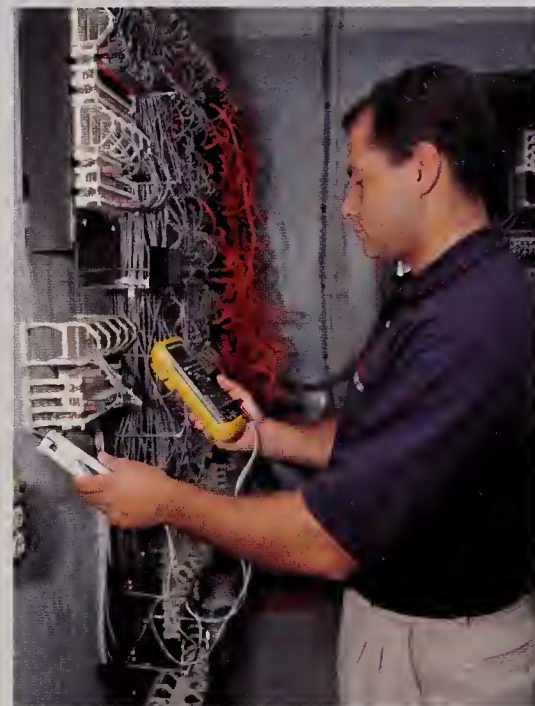
CRN also recognized that a PowerAudit uncovers a variety of problems that may have nothing to do with the computer equipment: "It may be that the power infrastructure in the building was not designed to conform with National Electrical Code (NEC) or Institute of Electrical and Electronics Engineers (IEEE) specifications," says CRN. "Or it may be that a business is simply overloading power supplies, potentially setting the stage for a hazardous situation."

Unfortunately, wiring deficiencies in new and old buildings alike bring about the greatest number of net-

work power problems, accounting for nearly 50 percent of all corrupted and lost data. In fact NEC wiring specifications are not sufficient to protect your network from damage or data loss.

In 75 out of 75 PowerAudits performed last year, problems were uncovered by engineers that were hazardous to computer equipment and data or that violated national or local code.

Call 888-289-2722,
ext. 8182 to receive
a FREE sample
PowerAudit report.



For more information about planning with PowerAudit, call 888-289-2722, ext 8182, or download a sample report from the PowerPage.™

For more information about PowerAudit, call fax the reply card at the back of the magazine to our resource center for free literature, or call 888-289-2722, ext. 8182. Visit APC's PowerPage™ on the Web at <http://www.apcc.com>, where you can examine a sample PowerAudit report.

Top Business Performer: Another Reason to Choose APC

APC recently ranked highly in two finance/business magazines, its stock performance mirroring its successful performance in sales.

APC: Five Years in NASDAQ 100

In the May 12 special section of *Fortune* focusing on the Nasdaq 100 Index, APC was ranked as the second best price/performance stock in the index in 1996. APC's stock had appreciated 186.8 percent, second only to Dell Computer which posted a 206.9 return in 1996. *Fortune* cited APC's record sales of \$707 million and earnings of \$92 million for that year.

To be included in the Nasdaq 100, according to the same special section, a company must be "among the larger, non-financial stocks on the Nasdaq Stock Market," and their stocks must, "have an average daily trading volume of more than 100,000 shares."

The article continues, "...while almost all are over \$1 billion in market value, \$6 billion is the average. In addition, companies have to be 'sea-

FORTUNE®
NASDAQ 100®

soned' by being listed on the Nasdaq Stock Market for two years before they can be measured for the index by other quantitative standards." APC has been a member of the Nasdaq 100 since 1993.

APC Making The Grade

In the May 20 issue of *Financial World*, APC was given the ranking of A [very high] in its

Independent Appraisals of Stocks section. The grades *Financial World* hands out range from A+ [superior], A [very high], A- [high], B+ [above average], B [average], B- [below average], C [speculative] to D [poor].

Financial World lists the 616 largest U.S. companies traded over the counter, based on market value. Each stock is rated on, "three-month percent change in stock price; percent change in trailing four quarters' sales; percent change in trailing four quarters' earnings per share; debt as a percent of equity; and return on capital."

For more information about APC financial performance, or to obtain an annual report, call 401-789-5735 x 2994 or E-mail investor_relations@apcc.com. American Power Conversion Corp. stock is traded on the NASDAQ exchange under the symbol APCC.

**OFTEN, NOTHING COSTS YOU MORE
THAN A SERVER CRASH.**



NOW SUPERIOR SERVER PROTECTION COSTS YOU NEXT TO NOTHING.

NOW AWARD-WINNING APC® PROTECTION COMES STANDARD WITH THESE SYSTEMS.

ENTRY LEVEL SERVER

DELL® POWEREDGE® 2100 SERVER

200MHz PENTIUM® PRO PROCESSOR

- 32MB ECC Memory (512MB Max.)
- 256KB Integrated L2 Cache
- Integrated Ultra/Wide SCSI-3 Controller
- 2GB Ultra/Wide SCSI-3 Hard Drive
- 8X SCSI CO-ROM Drive
- Intel® Pro 100B PCI Ethernet Adapter
- Intel LANDesk® Server Manager v2.52
- 6 Expansion Slots: 3 PCI, 3 EISA
- 6 Drive Bays

★ **Smart-UPS® 700 from APC**

★ **Free PowerChute® Plus Software**

★ **Optional SmartSlot™ Power Management Accessories**

- 3 Year Limited Warranty† with 1 Year of NBD On-site[§] Service
- 24x7 Dedicated Server Hardware Technical Telephone Support
- Free 30-Day Server Integration Telephone Support

\$3099

Business Lease[§]: \$115/Mo.
Order Code: 200188

MID-RANGE SERVER

DELL POWEREDGE 4100 SERVER

200MHz PENTIUM PRO PROCESSOR
(Quad Processor Capable)

- 64MB ECC Memory (1GB Max.)
- 512KB Integrated L2 Cache
- 2 Integrated Ultra SCSI-3 Controllers
- 4GB Ultra/Wide SCSI-3 Hard Drive
- 8X SCSI CO-ROM Drive
- Intel Pro 100B PCI Ethernet Adapter
- Intel LANDesk Server Manager v2.52
- 8 Expansion Slots: 5 PCI, 3 EISA
- 10 Drive Bays

★ **Smart-UPS 1400 from APC**

★ **Free PowerChute Plus Software**

★ **Optional SmartSlot Power Management Accessories**

- 3 Year Limited Warranty† with 1 Year of NBD On-site[§] Service
- 1 Year DirectLine[™] NOS Support
- 24x7 Dedicated Server Hardware Technical Telephone Support
- Free 30-Day Server Integration Telephone Support

\$6849

Business Lease: \$247/Mo.
Order Code: 200190

HIGH-END SERVER

DELL POWEREDGE 6100 SERVER

2x200MHz PENTIUM PRO PROCESSORS
(Quad Processor Capable)

- 128MB ECC Memory (4GB Max.)
- 512KB Integrated L2 Cache per Processor
- 2 Integrated Ultra/Wide SCSI-3 Controllers
- 3x4GB Ultra/Wide SCSI-3 Hard Drives
- 8X SCSI CO-ROM Drive
- PowerEdge Expandable RAID Controller
- Intel Pro 100B PCI Ethernet Adapter
- 10 Expansion Slots: 6 PCI, 4 EISA
- 10 Drive Bays

★ **Smart-UPS 1400 from APC**

★ **Free PowerChute Plus Software**

★ **Optional SmartSlot Power Management Accessories**

- 3 Years of NBD On-site[§] Service/ On-site Setup and Validation
- 24x7 Dedicated Server Hardware Technical Telephone Support
- Free 30-Day Server Integration Telephone Support

\$16,099

Business Lease: \$560/Mo.
Order Code: 200220

Given everything that's riding on your company's servers, crash protection is something you can't afford to be without. Which is why every Dell PowerEdge Server comes with the industry-standard features you've come to expect. And since 45%^{††} of all data loss is a result of bad power, we've just done something to bolster our award-winning reliability. We have worked with APC, the industry leader in power protection with over 8 million satisfied customers and a host of awards. Which means you'll find APC protection available across the entire line of PowerEdge servers, along with a \$25,000 Lifetime Equipment Protection guarantee* to replace or repair your server should a power-related problem arise. So choose your Dell PowerEdge. For high-end reliability there's the Dell PowerEdge 6100, loaded with redundant cooling fans, ECC memory, hot-pluggable drives and the Smart-UPS 1400 with optional SmartSlot Power Management accessories. Or choose the Dell PowerEdge 4100, which also comes with APC Smart-UPS, a recent recipient of *PC Magazine's* Editors' Choice Award.^{††} Or the Dell PowerEdge 2100, *Network Magazine's* Small Business Server of the Year. Whichever you choose, two features remain consistent: reliability and value. Things no business can afford to overlook.

APC®
www.apcc.com

DELL®
888-571-3355
www.dell.com

Mon-Fri 7am-9pm CT • Sat 10am-6pm CT • Sun 12pm-5pm CT
In Canada* call 800-839-0148
In Latin America* call 512-728-4685
GSA Contract #GS-35F-4076D

Keycode #30025

†For a complete copy of our Guarantees or Limited Warranties, please write Dell USA L.P., One Dell Way, Round Rock, TX 78682. Attn: Warranty. See policy for details. ††1993 Contingency Planning Research. ††Nov. 19, 1996 issue for APC Smart-UPS. †May 1997 issue. *Leasing arranged by third-party leasing companies to qualified customers. †On-site service provided by an independent third-party provider. May not be available in certain remote areas. *Prices and specifications valid in the U.S. only and subject to change without notice. APC, the APC logo, Smart-UPS, PowerChute and Protect ME! logo are registered trademarks, and Protect ME! and SmartSlot are trademarks of American Power Conversion, Inc. Intel and Pentium and LANDesk are registered trademarks of Intel Corporation. ©1997 Dell Computer Corporation. All rights reserved.

VARBusiness Says New Symmetra is Tops



VarBusiness wasted no time recognizing APC's most recent innovation, the Symmetra™ Power Array™, as the kind of product that the computer industry needs. The magazine editor, Jenna Kern, points out that sensitive electronics represent a growing majority of the devices consuming power in North America. That trend means power protection is essential.

"The need for...Symmetra is stronger now than ever, given the movement of business-critical apps from the glass house to smaller data centers with lower-cost file and Web servers," continued VarBusiness editor Jenna Kern in citing the product as Editor's Choice. "Such apps often involve crucial functions such as Web-based OLTP, so continuous power is essential."

Kern was quick to key in on the features and benefits that make the Power Array such a critical

element of datacenters everywhere: "Symmetra is made up of hot-swappable 4kVA power modules and battery modules that can be upgraded as needed. That way, [you] can purchase the backup capability they need now and easily scale up when the time comes, which it inevitably will.

"This hot-swappable nature makes it easier for [you] to manage and service the Symmetra. The system's four SmartSlots let network administrators choose how they want to be informed in the event of an outage: via the network, SNMP, the Web or phone/beeper. If any modules need servicing, [you] can pull them out and work on them without shutting down the system."

With seasonal and year-round power problems on the rise, Symmetra's unique protection promises to help administrators everywhere rest a little easier. For more information about protecting your datacenter, call 888-289-2722, ext. 1001.

"Symmetra™ Power Array™ energizes the high-end UPS arena."

-Jenna Kern, VARBusiness Editor

VARBusiness



Symmetra has taken the experts by storm. Learn how to protect your datacenter: Order a FREE video by calling 888-289-2722, ext 8182.

How Much is Power Array™ Uptime Worth to You? This ROI Worksheet Reveals the Cost of Your Power Availability Gap

Complete the ROI worksheet to see what redundancy and scalability mean to your bottom line.

If you're a datacenter manager, the difference between a corner office and a cramped cubicle can be measured in your network's reliability. That's why you've invested thousands in clustered servers and RAID arrays. But when the most common cause of downtime is bad power – nearly twice as common as human error – exactly how safe is your network, not to mention your career path?

According to the published Mean Time Between Failure (MTBF) figures of competitors' units, a typical legacy UPS is rated at 95% system availability, leaving a 5% power availability gap. Use the worksheet to compute what that availability gap costs you, then determine how much you'll save when you replace your legacy system with a redundant, fault-tolerant Symmetra Power Array.

For more information about how this award-winning technology can protect your datacenter, call 888-289-2722, ext. 8182

ROI Worksheet

Average Cost per Downtime Event

		[Sample Data]
Company size (Annual Revenue):	1	[\$400 mil.]
% Revenue directly linked to systems/network:	2	[80%]
Actual system-related revenue risk:	3	[\$320 mil.]
Revenue loss per hour downtime: [3 / 2000 hrs.]:	4	[\$160,000]
Personnel cost per hour: [# of users x hourly wage]:	5	[\$30,000]
Rev. & Pers. cost per event [4 + 5 x MTTR (24 hours)]:	6	[\$4.56 mil.]
Lost data cost per event: [4 x 8 hrs x 12%]:	7	[\$153,600]
Total cost per event [6 + 7]:	8	[\$4.71 mil.]

A. No UPS protection

Risk of downtime =
15* x 8

-\$ [70.7 mil.]

B. Legacy UPS

Static downtime risk =
15 x 8 x .05**

-\$ [3.54 mil.]

C. Power Array

Flexible downtime risk =
15 x 8 x n (n = % gap¹)

-\$ [7,065]

* LAN Computing, 11/2/92 **Published Competitor Legacy UPS Availability = 95% ¹Varies based on Power Array configuration

NEW 3U Smart-UPS® Rack-mount: All the Power in a 40% Smaller Size

New 3-U Rack-Mount Chassis

APC announces a rack-mounted Smart-UPS uninterruptible power supply (UPS) in a new 3U rack-mount form factor. The SU2200RM3U and SU3000RM3U rack-mount Smart-UPS utilize a new 3U (5.25") chassis, reduced from the previous 5U (8.75") chassis. The units provide the same superior functionality and features of the existing Smart-UPS line in a compact, more convenient size.

The rack-mount Smart-UPS line is designed to provide performance power management for advanced business networks. Mounted in industry-standard, 19" racks and enclosures like APC NetShelter™, and offering full SNMP manageability, the units are an ideal protection solution for today's rack-mounted network and internet-working equipment.

"With more computer equipment moving into rack enclosures, we wanted customers to be able to utilize more server and internetworking equipment. The new Smart-UPS 2200 and 3000 rack-mount models accomplish this by reducing the UPS height to a new 3U low profile," said Scott Olsen, APC's product manager, Network Power Solutions Division.

Compatibility with today's server management products is a must for critical peripherals. All Smart-UPS products are completely compatible with server management software such as Compaq Insight Manager, IBM Netfinity, and HP NetServer Assistant.

The Smart-UPS family features SmartSlot™, an internal accessory card slot for integrated UPS management. SmartSlot enables the user to customize and enhance the management, control and performance of the Smart-UPS unit. The SmartSlot and optional accessory cards offer customers convenient, seamless integration of UPS accessories.

The PowerNet™ SNMP Adapter card allows the UPS to be connected directly to the network for SNMP management. The UPS Interface Expander card is used for multiple platform, unattended, graceful shutdown from a single UPS. The Call-UPS II card provides remote, out-of-band management of the Smart-UPS over a modem.

Match Your Black IBM Server

The Smart-UPS Rack-mount 1400, with Black bezels as a special order option, will be added to APC's standard distributor channel. For reference, the black color matches the IBM ThinkPad notebook computer family (IBM Raven Black).

To let you add more components to network enclosures, APC sliced 2U of size from the Smart-UPS 2200 and 3000, without reducing power or runtime.

These units will be available from the IBM PC Company in September of 1997, but are being released through the channel to accommodate IBM customers

that have purchased the IBM 325 Rack Drawer Server and want a black UPS to match. These units will also meet growing customer demand for black rack mount UPS solutions for telecom applications as well as non-IBM black rack equipment.



PowerView™ UPS Management Display

Hand-held monitoring and control of UPSs and Power Arrays™

When you're trying to solve a network problem, you need comprehensive control of every component of that network, including your APC UPS units. Sometimes those units are difficult to reach or even inaccessible, in a locked room or rack, because by their very nature an APC UPS needs much less attention than other network components. Still, in the event a power problem strikes, you need to be able to control the UPS without a step-ladder or the key to your wiring closet.

PowerView UPS Management Display provides remote control and monitoring of a connected APC UPS. PowerView is equipped with a cable so you can access the UPS controls without having to access the actual UPS.

The PowerView function menu is divided into seven partitioned categories:

1. UPS Status
2. UPS Setup
3. UPS Control
4. Event Logging
5. Control/Status of Accessories
6. Configuration of the Display
7. UPS Diagnostics

Four LED indicators across the upper face of the display provide overall status of the APC UPS:

- **LOAD ON Green** Indicates that the UPS is supplying power to the load (electrical device).
- **ON BATTERY Yellow** Indicates that the attached load is powered by UPS batteries.
- **BYPASS Yellow** Indicates that power to the load is being supplied directly from the power utility. The UPS has been effectively removed from the circuit. (Matrix-UPS and Symmetra only)
- **FAULT Red** Indicates that the UPS has detected an internal fault condition.

For more information about how PowerView can help you manage your network, call your local APC reseller, fax the reply card at the back of the magazine to our resource center for free literature, or call 888-289-2722, ext. 8182. For instant information, visit APC's PowerPage™ on the Web at <http://www.apcc.com>.



The new black bezel APC Smart-UPS 1400 – shown here mounted in APC's NetShelter – will soon be available as a special order item.

Protect Network PC Hardware and Data with ONE Solution: APC Back-UPS Pro®

Protect Network PC Hardware

Hardware represents a huge investment, but most hardware vendors or suppliers don't warranty their products against damage caused by surges, spikes or direct lightning hits.

Back-UPS Pro reduces all electrical surges to safe levels, and stops lightning with a multi-phase system of thermal and fast-acting fuses. Automatic Voltage Regulation and instantaneous battery back-up correct voltage fluctuations. The computer sees only clean, consistent power, even during a blackout.

And as if AC line threats weren't enough, spikes and surges can reach your hardware via datalines and damage your internal computer network interface cards, modems, motherboards, power supplies and hard drives. The surge will move from one component to the next as it dissipates, potentially destroying your whole computer. That's why Back-UPS Pro integrates dataline protection for 10Base-T network cabling (RJ-45) to prevent hardware damage from surges carried on these datalines. Full-time EMI/RFI noise filtration prevents data corruption caused by AC utility line noise.

PowerChute® Pro: WorkSafe™ Saves Data

Complete data protection and management requires PowerChute Pro software, which is included free with every Back-UPS Pro. Its WorkSafe™ feature protects and saves work in progress in open Microsoft Office applications.

WorkSafe ensures that your valuable data is safe whether or not you are present when a power event occurs. In the event of a power outage, PowerChute Pro activates the WorkSafe feature to save open files and gracefully close open applications, like Microsoft Word and Excel. PowerChute Pro then shuts down the operating system.

The Back-UPS Pro PNP, bundled with PowerChute Pro software, gives the user peace of mind by guaranteeing not only the integrity of the operating system and applications, but also any work in process that may be left open.

PowerChute Pro also features a Graphical

User Interface (GUI) to provide information on UPS Status, recent UPS self-tests and UPS events. The Event Log shows a history of UPS operation to help track a problem to its source. For instance, timed HVAC equipment shutdown may cause a daily power surge as machinery dissipates energy. The log will help match the surge to the cause.

APC provides a complete range of power protection and management options for your network workstations. Whether you need battery back-up power and premium surge suppression for 10 PCs or 10,000, you'll find the perfect solution in the Back-UPS line. For more information, call 888-289-2722, ext 8182 or use the FREE literature request card at the back of the magazine.

Other PowerChute Pro Benefits:

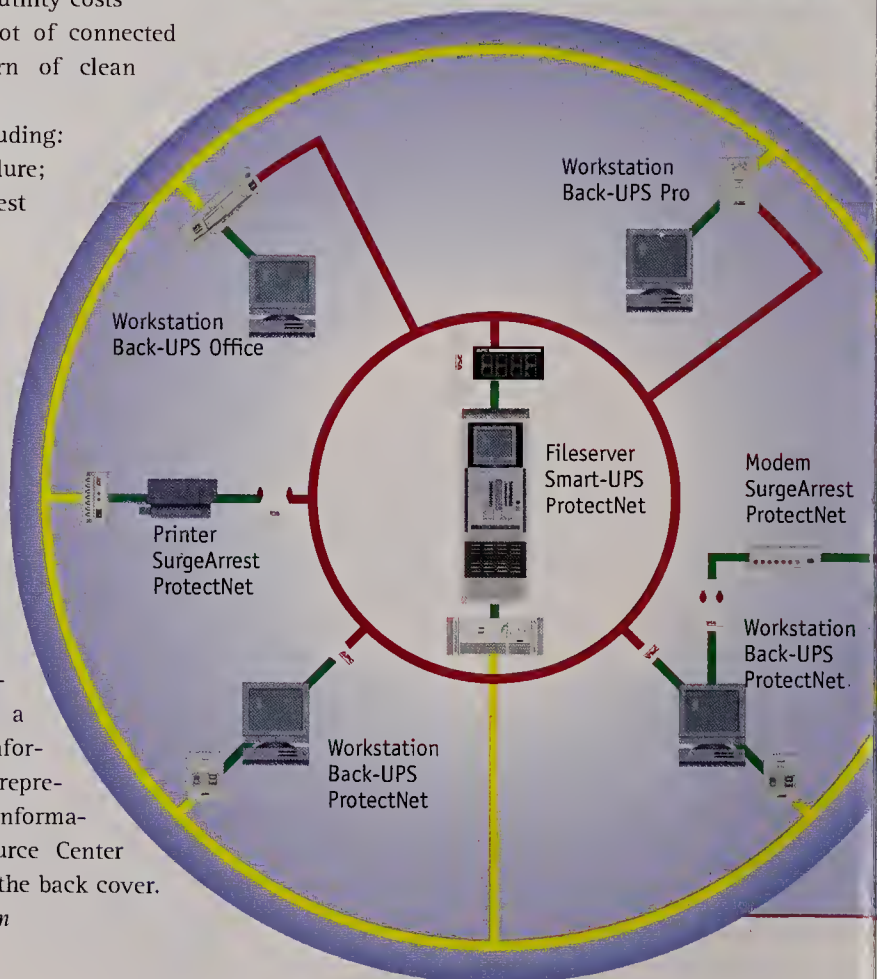
- Scheduled weekly or daily shutdown to help conserve power and cut utility costs
- Automatic System Reboot of connected workstation upon return of clean utility power
- UPS Configuration including: Simulated Power Failure; UPS Self-Test; and Test UPS alarm
- Configurable UPS shutdown and message parameters including: Timed Message Delay; Message Interval; Low Battery Shut-down; and Timed Shut-down allow you to decide to whom and when PowerChute plus should send information about problems.

For the latest NT workstations, Back-UPS Pro is a perfect match. For more information call your local APC representative, or fax/mail an information request to our Resource Center using the reply card inside the back cover. Or visit <http://www.apcc.com>

Node Protection a No-brainer

"Our current integral use of APC client UPSs was part of our strategic vision to stabilize network services throughout the enterprise regardless of any volatile environmental conditions," says Michael

Mullicane, CIO for America II Group, the 17th fastest growing company in America according to Inc.'s 1994 list. "It's a no-brainer to protect servers, but we learned that it was crazy to bog down our MIS staff with client-related downtime and data loss when an APC UPS is such a cost-effective solution. Now we properly protect every single workstation in our entire global network. We chose APC due to their excellent performance on our servers during Hurricane Erin. In fact, using APC's PowerNet SNMP Manager we can view power status across the network all the way down to the desktop. At the bottom line, having a standardized desktop environment that includes a fully integrated APC UPS is key to providing reliable information access to our employees, and that's what we're all here for."



The Truth About Telephone Lines: Your Risk of Damage and Data Loss Doubles

Power problems are more prevalent than you might think. In fact, you have a better chance of winning the lottery than of escaping power problems, the single largest cause of computer data loss and hardware damage. If that weren't bad enough, as soon as you plug a phone line into your computer, you double its vulnerability to power problems. Add any peripheral, and the threat triples. Even a shielded AC power line cannot protect against a power surge traveling down serial and datalines to toast your expensive PC.

In today's wired world, it is important that every workstation be Internet ready. With built-in phone line/10Base-T network cable surge protection, Back-UPS Office provides a seat belt for the drive on the information superhighway. It stops dangerous surges from entering your computer via phone lines and damaging your modem, network interface card, or even your motherboard.

Unique Multipath Protection

Multiple peripherals and datalines increase the chances of suffering from crippling power problems, yet these devices are necessary. So what's a computer user to do to minimize the risk?

Once again, Back-UPS Office can solve your problems. Back-UPS Office provides full-time surge suppression and a site-wiring fault protection system that spreads a multipath safety net under any remaining peripherals, like modems, printers, faxes and phone systems.

Whether on the floor, or mounted on a wall, Back-UPS Office provides the necessary surge protection for all your peripherals, as well as the critical battery backup for the CPU and monitor. The compact Back-UPS Office also streamlines your desktop power protection solution.

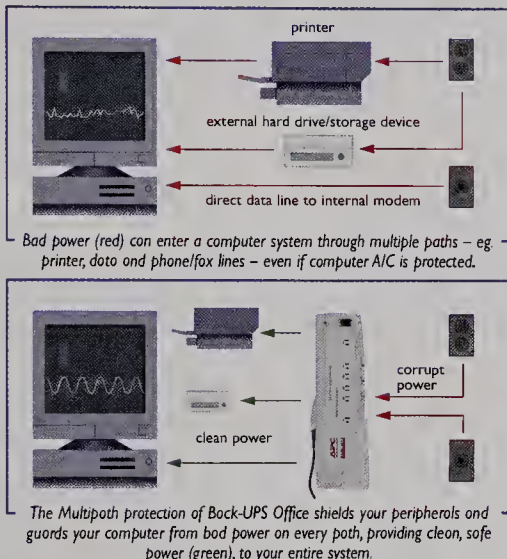
It's backed with a two-year warranty and APC's Lifetime Equipment Protection policy that provides up to \$25,000 of insurance against surge

damage to properly protected equipment. (See policy for details. Valid in the United States and Canada only.)

Don't let your workstation fall victim to the hazards of unprotected computing. Keep your system safe with reliable and proven multipath power protection — APC's Back-UPS Office.

For more information on protecting your workstation, call 888-289-2722, ext. 8182.

Multipath Means Total Power Protection



APC Solves Mysterious Data Corruption on Protected Servers: Unprotected Network Nodes to Blame



Utility power from an outlet or dedicated AC line is not safe. In fact, a server isn't completely safe from the hazards of bad power until every network node is protected. The mistake many network managers make when planning is to cut costs on workstation power protection. Those nodes pump life-blood into the server in the form of valuable data, and if that data is corrupt because of a local power anomaly, everyone on the network suffers. The cost of replacing such corrupt data, combined with the cost of workstation downtime and recovery can be devastating to a company's bottom line.

Without the premium surge suppression and instantaneous battery backup of an APC UPS, AC utility power subjects connected equipment to a constant barrage of power anomalies, the majority of which are transparent to the casual observer.

Speed and multi-tasking multiplies the risk to highly valuable data and work in process at any given second. Crashes can occur when your unprotected computer is abruptly starved of power, and corrupt files can be replicated to networked PCs or servers, compounding the cost of power problems.

A severe power event, which can strike at any time, prevents normal shutdown procedures. "Hard" shutdowns result in lost data, and can corrupt the master directory preventing automatic Windows system restoration, and increasing recovery time. That recovery time, when multiplied by the number of users on your network, increases costs exponentially.

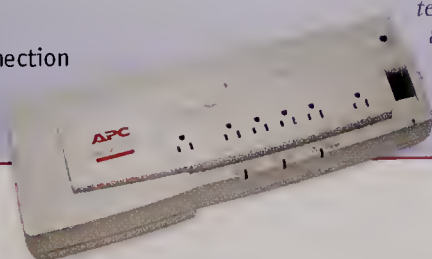
How great are these costs? Medium sized companies rate them at \$10,000 per hour, according to Electric Power Systems Quality, by Roger C. Dugan, senior consultant, Electrotek Concepts, Inc. Such costs can impact businesses so severely that they never recover from the problem.

For more information about how APC can help protect your network, call your local APC reseller, fax the reply card at the back of the magazine to our resource center for free literature, or call 888-289-2722, ext. 8182. For instant information, visit APC's PowerPage™ on the Web at <http://www.apcc.com>.



- Raw Telephone Line
- APC Protected Connection
- Raw Utility Line
- Raw Network Connection

Bulletproof your system with APC's award-winning Back-UPS, Back-UPS Office and Back-UPS Pro. Use APC ProtectNet dataline surge suppressors for comprehensive server, laptop and peripheral protection. Call 888-289-2722, ext. 8182 for more information on how to integrate a complete APC solution, or to find your nearest APC dealer.



APC PowerChute® *plus* for NetWare With New Support for NDS



PowerChute *plus* v.4.3 for Novell's IntranetWare, the latest version of APC's award winning UPS monitoring software package, will allow system administrators to monitor APC UPSs through the NWAdmin Utility of NDS. System Administrators will observe improved network performance and find it far easier to monitor all their APC UPS resources.

"The customers we share with Novell around the world requested an NDS-aware power protection package to enhance network security, improve network manageability and increase network performance," said Kevin Brown, APC Software Division marketing manager. "APC delivered the solution faster than anyone else."

Novell Directory Services (NDS), is the technology that provides a single, global, logical view of all network services and resources. This allows users to access network services and resources with a single login, regardless of the user's location or the location of the resources. It also offers a single point of control for administrators through graphical administration utilities. Critical to the success of such a scheme is the integration of network component resources into the NDS environment. APC's NDS-aware PowerChute *plus* software integrates power protection into the NDS environment.

"APC is the first UPS manufacturer to actively support NDS," said Michael L. Simpson, Director of Marketing for Novell's Internet Infrastructure Division. "APC's UPSs provide excellent power protection for IntranetWare servers. The release of American Power's UPS integration with NDS is another step forward in the plan to make directory services a single point of administration and single login infrastructure for the entire network."

Improved Security Validation

The latest version of APC's power management software uses the built-in NDS security system to maximize your peace of mind.

The benefits of this integration don't end with security: When power problems occur, a quick response time is critical. Having to log on to each server on the network separately just to check the UPS status eats away at precious seconds that should be used diagnosing and correcting the problem. With this new version of PowerChute *plus*, customers have a unified login id and will no longer be prompted to log on every time they want to

access a new server. When accessing PowerChute *plus* through the Graphical User Interface (GUI), users are automatically validated through NDS rather than through a time-consuming additional login id.

Easy to Use

In even a medium-sized network, remembering which servers are connected to an APC UPS, not to mention which of those are running PowerChute *plus* software is a daunting task. To ease management of network resources, APC coded PowerChute *plus* 4.3 to place an APC UPS object in the NDS tree for each UPS connected to a particular server, and, if PowerChute *plus* is running on the server to which the UPS is connected, an attribute flag will indicate the software's presence. Administrators can easily view all of APC's UPSs in the WAN through the IntranetWare Administration tree.

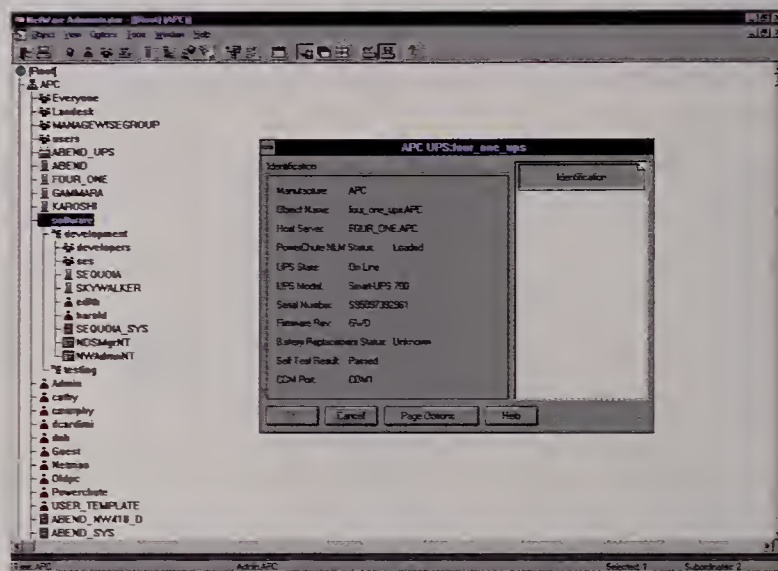
"APC is the first UPS manufacturer to actively support NDS. APC's UPSs provide excellent power protection for IntranetWare servers."

—Michael L. Simpson
Director of Marketing
Novell Internet Infrastructure Division



Enhance Network Performance

To further simplify the Administrator's management efforts, PowerChute *plus* will automatically update its information in the NDS tree. That means the software will no longer have to perform "bindery emulation", which caused repeated messages to be broadcast over the network. The result: A significant reduction in network traffic.



New NDS-aware PowerChute *plus* improves management, increases security, enhances network performance and offers new ways to monitor your APC UPS units. Call 888-289-2722, ext. 8182 for more information.

**Download PowerChute *plus* upgrades
FREE from the web at: www.apcc.com/english/prods/sware/upgrd**

Asset Management: View APC UPSs via NWAdmin Utility

System Administrators will now have the ability to use the NWAdmin utility of NDS to view the status of all the UPSs on the Network.

NWAdmin allows users to manage network resources. By providing a snap-in interface for NWAdmin, APC lets users browse the UPS objects with other network resources, and provides an additional option for viewing UPS information.

Every APC UPS will be represented by an APC UPS Icon. When the icon is expanded, the administrator will have access to information like the UPS model, UPS Status, Firmware revision, Serial Number and Replace battery status.

This OS upgrade is a critical step in the effort to provide network administrators with a comprehensive and reliable power protection solution. The software is expected to be released in September of 1997, and will be available for download, free of charge, from the APC PowerPage™ at <http://www.apcc.com>.

For more information about PowerChute *plus* for NetWare and NDS, call 888-289-2722, ext. 8182, or use the reply card at the back of the magazine to order FREE, detailed product literature.

Add the performance power protection of this baby



to this **GUTSY**
Bad Boy



And show mother nature just who's in charge



Just forget about it. Mother Nature ("Mom") and her partner Murphy's Law ("Murph") have nothing on this computing reliability tag team. In the cage match of

life, power problems can bring you down faster than you can say "fried motherboard!"

The Gateway G6-233M system's foundation is a performance triple play: 233MHz Intel Pentium II processor, 512K cache and 32MB of EDO RAM. This hyper-tweaked bad boy toys with your existing software and strains at the leash to get to the next generation of applications. It's a raging collection of microscopic access times, blazing throughputs, razor-sharp resolutions and cavernous storage.

The standard APC Back-UPS Pro® 650, adds muscle to your madness, keeping your G6-233M up even when the juice is off, and shutting down safe and sound even if you're not around. Surges and lightning strikes get cut down to size whether they knock on the front door (AC) or back (dataline). So call today and place your bet — on Gateway and APC, not Mom and Murph. Then get ready to release a G6-233M and APC thunderclap that will leave the computing world running for cover.

APC
AMERICAN POWER CONVERSION

G6-233M

- Intel® 233MHz Pentium® II Processor with 512K Cache
- 32MB EDO DRAM
- CrystalScan® 700 .28dp Monitor (15.9" viewable area)
- STB® ViRGE™/ GX 4MB, 3-D 64-Bit PCI Graphics
- 3.2GB 12ms Ultra ATA Hard Drive
- 12X min/24X max CD-ROM & 3.5" Diskette Drives
- APC Back-UPS® Pro™ 650 with PowerChute® Pro Power Management Software; \$25,000 Lifetime Equipment Protection from APC
- Ensoniq® Wavetable Audio
- Altec™ Lansing ACS-41 Speakers
- TelePath® Fax Modem for Windows with x2™ Technology*
- Mid-Tower Case
- 104™ Keyboard & Microsoft® IntelliMouse™
- MS® Windows® 95 & MS Office 97, Small Business Edition Plus Encarta® 97
- MMX™ Technology-Enhanced Software
- Gateway Gold™ Service & Support for Desktop PCs

\$2978

*Maximum data transfer rate dependent on certain variables including particular modems with which you are communicating, telephone lines, communications software and communications protocols.

And You Get It
From These Guys



GATEWAY2000
"You've got a friend in the business.™"

888-888-0273
www.gateway.com

Can A Power Outage Kill Your Business?

The real problem with bad power is that you never know when they will strike. This lack of warning leaves network administrators and power customers with one more threat to their business, not to mention their peace of mind.

Research has shown that only 43 percent of businesses suffering a disaster ever recover sufficiently to resume business, according to the National Archives and Records Administration in Washington, D.C. Among businesses that do reopen, only 29 percent are still operating two years later. Even more ominous is the fact that 93 percent of businesses that lost their datacenter for 10 days or more had filed for bankruptcy within one year of the disaster. And 50 percent of businesses that found themselves without data management for the same time period filed for bankruptcy immediately.

Now more than ever disaster prevention and recovery plans are critical, and with the growing dependence of businesses on their computers and networks, power protection and management must be part of that plan.

For more information about how APC can help protect your network, call 888-289-2722, ext. 8182. For instant information, visit APC's PowerPage™ on the Web at <http://www.apcc.com>.

Get Protected NOW!

Summer storms shower the worst luck on computer users.

Misfortune often comes in the form of lightning or a storm-related power surge or outage. But what can you do in the face of such awesome natural forces? Especially with only 24 hours in every day?

APC knows you haven't got time to waste, so the PowerPage™ offers several live interactive tools to ensure you get the power protection you need, when you need it. A quick three-step process will get you well on the way to summertime peace of mind.

1. Check out the APC Weather pages, especially the weekly national lightning strike pattern page and the Tropical Storm Tracker.

2. If you're still not sure how susceptible you and your network are to bad power, take the APC "Are You At Risk?" quiz to determine exactly where you stand in relation to Mother Nature.

3. Once you've measured your susceptibility, a few mouse clicks will take you to the APC Dealer Locator so you can find the APC reseller nearest you.

You can point your browser right to any of these tools using the following direct URLs:

Lightning Strike Map

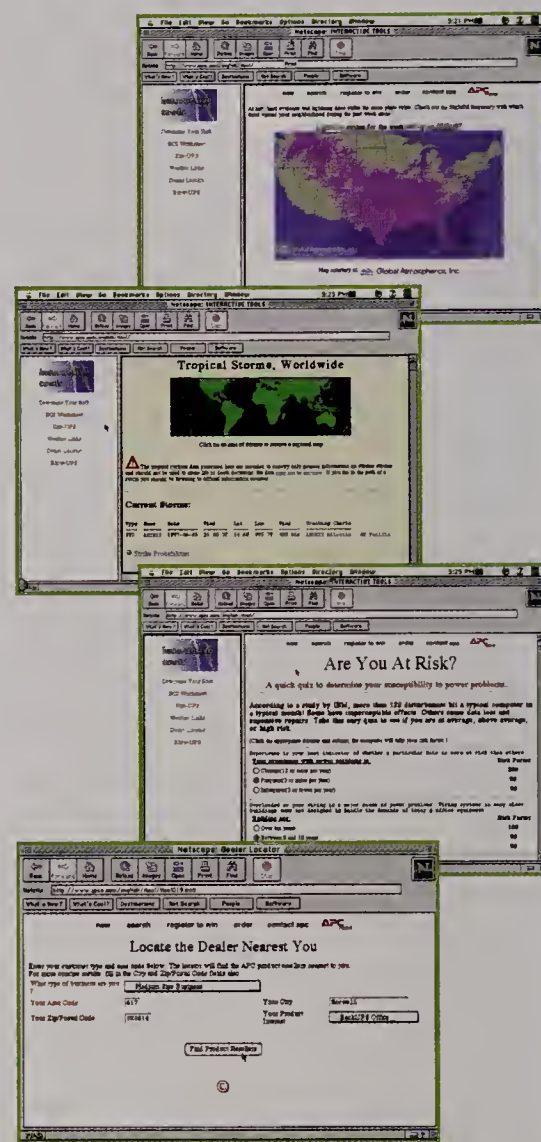
www.apcc.com/english/itool/itool006.htm

Are You at Risk?

www.apcc.com/english/itool/itool003.htm

APC Dealer Locator

www.apcc.com/english/itool/itool19.htm



Why Wait for APC Currents?

In the fast-paced world of high technology, just keeping up is a difficult task. That's why we deliver APC Currents to your mailbox once per quarter. But often that quarterly update isn't quite timely enough. Keeping a network or even a home PC up-to-date is a constant struggle, so you need news about the latest technology and solutions as soon as it's available.

NEW Web Edition

The NEW APC Currents Web Edition brings PowerNews™ right to your browser. Simply bookmark the direct URL (<http://www.apcc.com/english/powernews/currents>) and you'll have instant access to the latest news from APC.

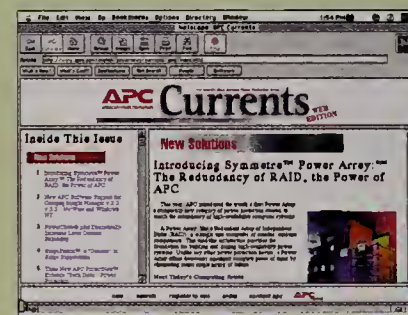
The Web Edition will be refreshed every two months. If you subscribe to the our E-mail news service we will notify you when it's updated.

FREE E-mail Subscription

As a compliment to APC Currents and the information posted on the Web Edition, we're offering free subscriptions to three valuable E-mail news sources. With them you can be assured of immediate notification of product introductions and updates, technical support documents, spec sheets, money saving promotions, APC customer stories and APC Currents.

POWERNEWS™

- Complete Press Releases: Product, Financial, ProtectME!
- Complete Electronic Promotions
- APC Currents electronic magazine
- Customer Stories
- Library of support documents



How to Subscribe:

Send an E-mail to listproc@apcc.com with no subject and "subscribe <listname> <your E-mail address>" as the body. For example: "subscribe powernews jdoe@place.com"

To unsubscribe at any time, send an E-mail to listproc@apcc.com with no subject and "unsubscribe <listname>" as the body.

Subscribe on the web at www.apcc.com/english/itool/itool26.htm

HP Pegs American Power Conversion for PowerWise Support



Hewlett-Packard Company and APC recently signed a contract that sets APC to provide ongoing warranty support for HP's installed base of HP PowerWise uninterruptible power supply (UPS) customers. Effective May 1, APC began providing UPS products and offering power-protection solutions for HP PowerWise customers' future UPS installations. HP will no longer produce, supply or support HP PowerWise products.

"HP PowerWise customers will be well-sup-

ported, thanks to APC's commitment to offer complete support to our global customer base," said Gary Whitman, marketing manager of HP's New Jersey Division. "APC has the technical expertise necessary to support HP PowerWise products and customers, and we are confident they will provide the quality of service our customers are accustomed to."

"HP recognizes the value-add that power protection brings to a customer's network," said Ed Bednarcik, general manager of APC's Network

Power Solutions Division. "APC is committed to continue providing the highest-quality UPS products and services to HP PowerWise customers. We are well-positioned to accomplish this due to APC's comprehensive understanding of customers' power-protection needs."

HP PowerWise UPS customers worldwide may contact APC for warranty service and technical support for their installed systems. In North America, call (888) 204-0173. Outside North America, call 353-91-702000, extension 2012 (English), extension 2013 (French and Spanish) and extension 2014 (German and Dutch).

HP to APC SKU Conversion Chart

HP SKU	Model	APC SKU
C4775B	Power Wise L600	SU700NET
C4776B	Power Wise L900	SU1000NET
C4275B	Power Wise 1000	SU1000NET
C5225B	Power Wise L1250	SU1400NET
C4276B	Power Wise 2100	SU2200NET
C4621A	Add-on battery for 1000	SU24XLBP
C4622A	Add-on battery for 2100	SU48XLBP
C4620A	10Base-T SNMP Interface	AP9605
C4692A	10Base-T & Thin-LAN SNMP Interface	n/a
C5232A	Rack Shelf for L600	SU700RMNET
C5233A	Rack Shelf for L900/L1250	SU1000RMNET / SU1400RMNET
C4631A	Rack Shelf for 1000/2100	SU1000RMNET / SU2200RMNET
C4624B	IBM OS/2 Monitoring Software	AP9002
C4626B	SCO Unix Monitoring Software	AP9004
C4627B	HP-UX Software	AP9004 / AP9005
C4628B	Windows NT Cable Kit	940-0020
C4629B	IBM AS/400 Cable Kit	940-0006
C4630B	Banyan VINES Cable Kit	940-0004



"HP PowerWise customers will be well-supported, thanks to APC's commitment..."

Gary Whitman, marketing manager
HP's New Jersey Division



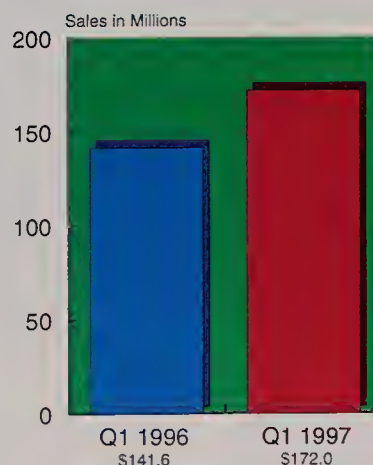
APC Sales Continue To Rise in Q1 '97

APC recently announced sales results for the three months ended March 30, 1997. Sales for the first quarter of 1997 were \$172.0 million, up 21.5 percent from \$141.6 million for the first quarter of 1996.

"We are very pleased with the (growth) we continue to see in our business," explained Rodger B. Dowdell Jr., president and CEO. "The global business fundamentals that drive the uninterruptible power supply (UPS) industry remain favorable for APC's long-term success."

"The past three months have been a very exciting period for APC," Dowdell said. "Most notably during the quarter, we announced APC's first entry into the above 5kVA power protection market with the Symmetra™ Power Array™. We designed an innovative system to bring scalability and redundancy to the UPS industry," added Dowdell. "We focused on fulfilling the primary needs for power protection in the data-center customer set. By combining high availability power protection with remote manageability, predictive failure and proactive alerts, Symmetra is a complete solution for today's datacenter."

APC Comparative Sales Q1 1996 to Q1 1997



APC sales continued to rise in the first quarter of 1997. For more information about investing in APCC stock, please call the APC investor relations department at 800-788-2208, ext. 2994

"In addition, APC continues to focus on building relationships with many leading technology vendors," continued Dowdell. During the quarter the Company began ProtectME!™ with APC marketing campaigns with Dell Computer Corporation and Quantex Microsystems, Inc., as well as a new sales and marketing relationship with Acer Sertek in Taiwan.

Finally, APC continued to be the recipient of worldwide recognition during the quarter. This included the *ComputerWorld* "Reseller Choice" award, the *Computer Shopper* "Best UPS" award for the Back-UPS Pro®, *PC Bulgaria's* "Editor's Choice," inclusion in *Dataquest's* list of product "Sizzlers+97" in India and, finally, for the sixth year in a row, APC was named "Best to Sell" by *The VAR* magazine in the UK.

For more information about APC financial performance, or to obtain an annual report, call 401-789-5735, ext. 2994 or E-mail investorrelations@apcc.com. American Power Conversion Corp. stock is traded on the NASDAQ exchange under the symbol APCC.



Utility Power

Irv Betch, Field Technician
Constellation Energy Corporation
Baltimore, MD



"APC Products Solve Customers' Power Problems Once and for All."

"I'm an energy services technician for BGE, the gas and electric utility that serves Baltimore and most of Maryland. After our merger this spring with Washington DC-based PEPCO, our new company, Constellation Energy Corporation, will be the 9th largest utility in the country, with more than 1.8 million electric and 546,000 gas customers. I'm one of three BGE technicians for our entire service territory, responsible for resolving customers' power quality problems or other related concerns.

"The most important words when discussing power quality are 'sensitive electronic equipment' and at BGE, the most important words are 'customer education.' Our standard operating procedure begins with educating customers on the importance of protecting sensitive electronic equipment and ends with providing the solution most appropriate to their needs.

In most cases, we've found APC products are the optimum solution to protect file servers, workstations and telephone systems. They solve cus-

tomers' power quality problems once and for all, which makes their jobs - and ours - easier.

"The cost of an APC product is small compared to the cost of replacing or repairing sensitive equipment. "Once customers realize the importance of proper protection for sensitive equipment, our relationship becomes more interactive: a partnership focused not only on solving today's problem but also on prevention of others that may arise down the road. We may install monitoring equipment on site to pinpoint events to assist us in identifying - and solving - the problem.

"In the three years that I've been part of the Energy Sales and Services department, I've never had a customer displeased with the APC products we've recommended. The bonus? These satisfied customers request more APC products for their homes and businesses."

Utility companies interested in co-operative marketing opportunities, please E-mail utility@apcc.com

"With APC Smart-UPS,® We Know Our Data and Hardware are Well Protected."

"Light Matters, Inc. is a special effects/computer graphics company, currently located in several adjoining apartments. We are a very rapidly growing home-based business. We're currently utilizing three servers and 25 Silicon Graphics workstations - to create visual affects for the film industry. Most recently we've worked on this summer's blockbuster, Volcano, The Nutty Professor, and are currently working on Titanic and the X-Files movie. You could say we take a sort of guerrilla approach to visual affects, because our overhead is low for the industry, but the work that is produced here is very high-end work. We have 6 animators working at this location.

"We created 65 shots for Volcano, and 36 of these included adding lava to the scenes. We did over a third of the lava in the movie - and of these, 21 were 100% computer-generated. Just as a point of interest, the other kind of lava actually uses a food additive called methycil which is also used in fast-food milk shakes! In the film Volcano they used roughly 750 gallons of methycil - died fluorescent orange and red.

"Despite our appearances, we are essentially an apartment-based business and because we have so many machines running, we're just about at capacity in terms of available AC power to the apartment. On three occasions, we lost power during the production of Volcano, and the UPSs allowed us time to soft-shutdown the machines. The UPSs protected us from hard drive head crashes, saving us hours of recreating lost images. APC was the most reliable UPS available, and offered us the most cost-effective way to ensure data integrity.



Hollywood

Colin Strause
3D Supervisor
Light Matters, Inc.

"We're using 10 APC Smart-UPS 1400's - each protecting three workstations. It instilled confidence while working knowing that our data and hardware was well protected."

APC in the Movies



"I'm ready for my closeup Mr. De Mille..."

FREE T-shirt
If You Spot an APC Product on Screen!

Fax your APC product sighting to: APC in the Movies, 401-788-2739. E-mail hollywood@opcc.com. Or visit <http://www.apcc.com/english/promo/promo007.htm> Don't forget to include your mailing address and T-shirt size!

"With the APC Back-UPS® in Place the Clock Will Continue to Work Throughout a Power Failure; Even the Chimes Continue to Strike Every Fifteen Minutes."

"In 1996, the town of Hathersage suffered over 30 power interruptions. Every time it happened I had to climb 100 steps to restart the church clock."

*Peter Smith, Parish Clock Winder,
Hathersage Parish, England*



"St Michael's Church in Hathersage, Derbyshire, is a quaint 14th Century parish church. Its location, high in the Derbyshire Peak District, makes St Michael's the natural focal point of the village. The Tower clock can be seen at the top of the church spire and heard to chime the Cambridge Chimes every 15 minutes, every day of the year.

"The clock, donated to the church in 1879, is still in operation today. In those early days the official parish clock winder had to climb the 100 steps to the top of the tower every two days to wind the clock and the chimes. In 1969, it was hoped that the conversion to an electrical mechanism would make a tremendous difference, putting an end to the climbing and winding endured by the official clock winder. It didn't.

"The geographical locality of Hathersage means it is particularly susceptible to power failures. The overland cables and inclement weather often combine to knock-out the electricity supply. In 1996 alone, the area suffered 30 power failures in 12 months!! The design of the clock meant that every time the power failed the clock stopped and wouldn't restart on its own.

This meant another journey up the steps for the clock winder.

"The clock mechanism is designed to work at the same cycle rate as utility power. This makes it a very accurate time piece but also means when the power fails the clock won't restart.

"My family has been the official clock winders for three generations. My grandfather, father and myself have all climbed the narrow steps of the clock tower to wind it up. In 1969 the mechanism was converted to electric and I hoped it would be an end to the regular trips up the tower.

"My son, a software engineer, recommended the use of an APC Back-UPS to protect the clock mechanism when the power fails. The clock draws a comparatively small amount of power so the UPS keeps the clock running through the majority of our power cuts.

"With the APC Back-UPS in place the clock will continue to work throughout a power failure; even the chimes continue to strike every 15 minutes. In the past I would find myself resetting the clock almost once a week, now I only have to go up twice a year when the time changes in summer and winter."

For more information about Back-UPS call your local APC reseller, fax the reply card at the back of the magazine to our resource center for free literature, or call your local office (see numbers at bottom of page). For instant information, visit APC's PowerPage™ on the Web at <http://www.apcc.com>



Home and Office



*Peter Smith, Parish Clock Winder
St Michael's Church
Hathersage Parish
Derbyshire, England*

FREE Mug! Take the PowerPage™ Trivia Challenge:

Your Back-UPS Pro® Knowledge Could Win You a Free Sparky Coffee Mug!

Besides reliability, name TWO of the key features of the award-winning APC Back-UPS Pro® or PowerChute Pro® software.

Entry Instructions: Visit www.apcc.com/english/itool/itool008.htm any time after July 31st, complete the form, and if you're one of the first 50 people to type a correct answer in the "Comments and/or Promotional Password" field, you'll win the free mug (limit one per person/address).

That's it. Good Luck!



"I consider the APC Back-UPS® Office™ to be an indispensable tool to get through school successfully."

"I attend Cornell University as a second semester freshman, majoring in animal science. I have an IBM Aptiva, and this computer is extremely important to me, both for access to the Internet (I contact my family via e-mail), as well as to communicate with professors.

"I have an average of three to four papers due per week, and I use the Internet to get help and information from other students and professors at other universities. My computer is critical to my work; losing access to it because of bad power is unacceptable.

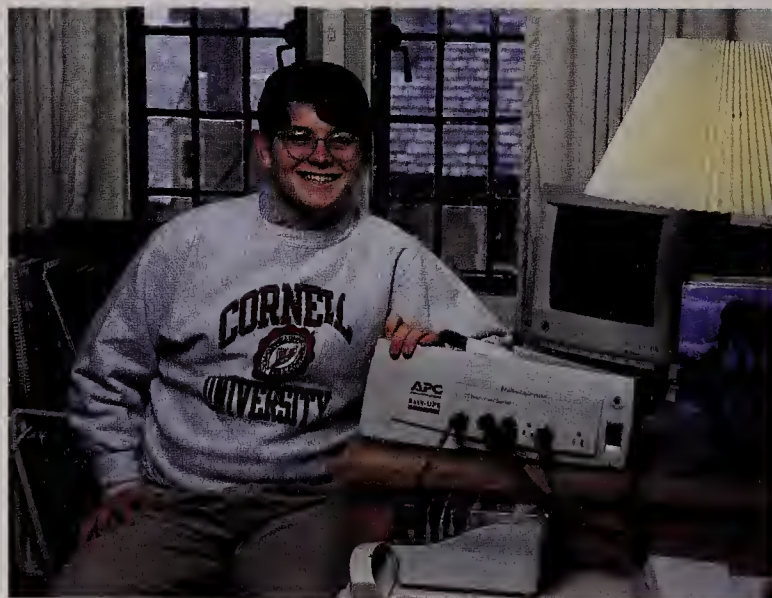
"Our dorms were built at the turn of the century, and the wiring is not equipped to handle all the electronic devices that students use today - stereos, refrigerators and computers. In my first semester, we had three power outages, and I'm

sure we're due for more.

"The first time a power outage occurred, I was typing a lengthy biology term paper, and it completely disappeared. Shortly after I got my APC Back-UPS Office, the power flickered and went out, but this time I was able to save my work and shut down. If you spend three or four thousand dollars on a computer, you should definitely spend a couple of hundred more to protect both the data and the hardware. I consider the APC Back-UPS Office to be an indispensable tool to get through school successfully."

APC Trade Show Calendar

DATE	REGION	SHOW/LOCATION	BOOTH #
National Tradeshow:			
July 9-11		Comdex Canada - Toronto	#425
Aug 13-14		Internet EXPO - Boston	#2818
Sept 16-18		IT Forum - New York City	#1770
Regional Tradeshow:			
July 9	South	Netware User International-Philadelphia, PA	TBA
Aug 19-20	South	Computer and Technology Showcase-Jackson, MS	TBA
Sept 3-4	Midwest	NetCom-Minneapolis, MN	#214
Sept 17-18	South	NetCom-Charlotte, NC	#901
Sept 30	North	Netware User International-Boston, MA	TBA
Oct 1-2	South	ITEC-Kansas City, MO	TBA
Oct 7-8	West	ITEC-Portland, OR	TBA
Oct 8-9	South	Computer and Technology Showcase-Oklahoma City, OK	TBA
Oct 15-16	West	ITEC-Phoenix, AZ	TBA
Oct 15-16	South	ITEC-Raleigh, NC	TBA
Oct 29-30	South	NetCom-Nashville, TN	#301
Need tickets? Visit www.apcc.com/english/about/about008.htm			



Education

Severence MacLaughlin
Student, Cornell University
Ithaca, NY



Mail-In
Offer

FREE SmartSlot™ Interface Expander from APC!

With the Purchase of a
Smart-UPS® 1400 or Smart-UPS® 1400RM
between June 1 and August 30.

Just send this completed certificate along with a UPC
symbol from an APC SU1400 or SU1400RM box and the
original purchase receipt dated between 6/1/97 and 8/30/97,
and get a FREE SmartSlot™ Interface Expander from APC!

**\$149
Value!**

APC®
888-289-2722
ext. 8182

Mail-In
Offer

\$30 REBATE

With the Purchase of a Back-UPS® Office™
between April 1 and August 30.

Just send this completed certificate
along with a UPC symbol from an APC
Back-UPS® Office™ box and the original
store receipt with the Back-UPS Office
circled, and get a \$30 rebate!

APC®
888-289-2722
ext. 8182

Mail-In
Offer

\$30 REBATE

With the Purchase of a Back-UPS® Office™
between April 1 and August 30.

Just send this completed certificate
along with a UPC symbol from an APC
Back-UPS® Office™ box and the original
store receipt with the Back-UPS Office
circled, and get a \$30 rebate!

APC®
888-289-2722
ext. 8182

Special Offer! \$30 Back-UPS Office Rebate

FREE SmartSlot™ Interface Expander from APC!



☐ **Yes!** I'm interested in receiving a FREE SmartSlot Interface Expander. I am enclosing the UPC symbol and original Smart-UPS receipt.

☐ **No,** I am not interested at this time, but please add me to your quarterly mailing list.

Name: _____
 Company/Title: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____
 # of servers on site? _____
 Brand of UPS used? _____

We regret we cannot fulfill incomplete requests.

Please fill out completely and mail to:

Dept. A8-CR
 American Power Conversion
 132 Fairgrounds Road
 P.O. Box 278
 West Kingston, RI 02892

1. Offer good in US & Canada only.
2. Purchase receipts must be dated between 6/1/97 and 8/30/97.
3. Requests must be received by 9/15/97.
4. Customers must send in: Original UPC labels printed on APC Smart-UPS packaging, Original purchase receipt, Completed coupon.
5. Only original receipts accepted.
6. Void where prohibited or restricted by law.
7. Proof of mailing does not constitute proof of delivery. APC is not responsible for lost, late, illegible or incomplete orders or postage-due, damaged or separated mail.
8. Not eligible: APC employees, agencies or distributors.
9. Fraudulent submission of multiple requests could result in federal prosecution under the U.S. Mail Fraud Statutes (18 USC, Section 1341 and 1342).
10. Not valid with any other offer.
11. Allow 6-8 weeks for delivery.
12. Offer expires 9/15/97.
13. APC Reserves the right to rescind promotion at any time.
- © 1997 American Power Conversion. All Rights Reserved. All trademarks are property of their owners.

Just send this completed certificate along with a UPC symbol from an APC Back-UPS Office box and the original dated store receipt with the Back-UPS Office circled for your \$30 mail in rebate!

Mail Coupon to: Back-UPS® Office™ Rebate
 P.O. Box 52930
 Dept. #A8-CR
 Phoenix, AZ 85072-2930

Name: _____
 Company/Title: _____
 Address: _____
 City: _____ State: _____ Zip: _____ Ctry: _____
 Phone: _____ E-mail: _____

Additional Terms and Conditions:

1. Offer good in US & Canada only. Rebate in US Dollars only.
2. Store receipts must be dated between April 1, 1997 and August 30, 1997.
3. Requests must be received by September 15, 1997.
4. Customers must send in: - Original UPC labels printed on APC Back-UPS Office pack aging, - Original store receipt, - Completed coupon.
5. Only original receipts accepted. Customer can request that their receipt be returned by including a note and a self-addressed stamped envelope with their rebate request.
6. Void where prohibited or restricted by law.
7. Limit five (5) rebates per customer.
8. Proof of mailing does not constitute proof of delivery. APC is not responsible for lost, late, illegible or incomplete orders or postage-due, damaged or separated mail.
9. Not eligible: APC employees, agencies, distributors or resellers.
10. Fraudulent submission of multiple requests could result in federal prosecution under the U.S. Mail Fraud Statutes (18 USC, Section 1341 and 1342).
11. Not valid with any other offer.
12. Allow 6-8 weeks for delivery.
13. Offer expires August 30, 1997.
14. Offer only good on Back-UPS Office (UPC code 7 31304 00588 9).
15. APC Reserves the right to rescind promotion at any time.

©1997 APC. All rights reserved. All trademarks are property of their owners. DSN-0189

Just send this completed certificate along with a UPC symbol from an APC Back-UPS Office box and the original dated store receipt with the Back-UPS Office circled for your \$30 mail in rebate!

Mail Coupon to: Back-UPS® Office™ Rebate
 P.O. Box 52930
 Dept. #A8-CR
 Phoenix, AZ 85072-2930

Name: _____
 Company/Title: _____
 Address: _____
 City: _____ State: _____ Zip: _____ Ctry: _____
 Phone: _____ E-mail: _____

Additional Terms and Conditions:

1. Offer good in US & Canada only. Rebate in US Dollars only.
2. Store receipts must be dated between April 1, 1997 and August 30, 1997.
3. Requests must be received by September 15, 1997.
4. Customers must send in: - Original UPC labels printed on APC Back-UPS Office pack aging, - Original store receipt, - Completed coupon.
5. Only original receipts accepted. Customer can request that their receipt be returned by including a note and a self-addressed stamped envelope with their rebate request.
6. Void where prohibited or restricted by law.
7. Limit five (5) rebates per customer.
8. Proof of mailing does not constitute proof of delivery. APC is not responsible for lost, late, illegible or incomplete orders or postage-due, damaged or separated mail.
9. Not eligible: APC employees, agencies, distributors or resellers.
10. Fraudulent submission of multiple requests could result in federal prosecution under the U.S. Mail Fraud Statutes (18 USC, Section 1341 and 1342).
11. Not valid with any other offer.
12. Allow 6-8 weeks for delivery.
13. Offer expires August 30, 1997.
14. Offer only good on Back-UPS Office (UPC code 7 31304 00588 9).
15. APC Reserves the right to rescind promotion at any time.

©1997 APC. All rights reserved. All trademarks are property of their owners. DSN-0189

The APC Reliability Challenge: Oldest Active UPS Wins Trip!

More than ten years after their first UPS was built, APC has issued this challenge: Show us the oldest unit in active service, and we'll show you a great time in Block Island.

We're going to reward the customer who has believed in our reliability as much as we do here at APC, where we still have plenty of these old APC workhorses protecting our workstations.

At APC we believe Reliability is Everything, and we know that while we may have developed technology that made our original units obsolete, they still provide the same level of power protection they did on the day they rolled off the line. They may have a new set of batteries, but these units were built to last.

APC protection is designed to be invisible, so take a close look at the photo (or your old sales receipts) and see if you've got a potential winner protecting a server or workstation.

If that unit happens to be the oldest in active service, you'll win an all expenses paid* weekend for two on Block Island, RI, one of the Northeast's finest vacation spots!

The trip includes:

- Two round-trip plane tickets to Providence, RI from anywhere in the continental US*
- A rental car to take you where you need to go.
- A tour of APC's main manufacturing facility.
- After the tour, we'll take you to the Smart-UPS assembly line, where we'll help you build your very own Smart-UPS to replace your winning UPS.
- We'll retire your old UPS to a permanent space in the lobby of our headquarters.
- A ferry ride from historic Narragansett Bay to beautiful Block Island
- Three nights accommodation at The Atlantic Inn, hosted by Brad and Anne Marthens, Keepers of the Inn.
- Complimentary mountain bike rental, so you can easily tour the island.

**See contest rules on other side of form*



1986, and Still running: 1, 2, 3.
1987, and Still running: 5, 6, 7.
1988, and Still running: 12.
1989, and Still running: 4.
1990, and Still running: 9, 10.
1992, and Still running: 13.
1993, and Still running: 11.
1994, and Still running: 8.



Build your own Smart-UPS

To Enter Your APC UPS, Just Complete and Mail the Form on the Back of This Page

Free Weekend on Block Island!



The historic Atlantic Inn is hosted by Innkeepers Brad and Anne Marthens.

Located on beautiful Block Island, just off the coast of Rhode Island, the Inn boasts spectacular views.



All you have to do is complete the form below, snap a picture of your APC unit, put them both in an envelope and send it to:

"APC Reliability Challenge"
c/o APC Currents
132 Fairgrounds Road
West Kingston, RI 02852

We'll check your serial number against our manufacturing records, and if you own the oldest APC UPS in active service, you'll win the weekend on Block Island!

Your Name
Address.....
.....
City.....
State.....Zip
Country
Telephone
E-mail
Serial Number (from the back of the unit)
.....

Attach your UPS Photo Here



Visit our PowerPage™ at www.apcc.com/english/powernews/vacation for more entry forms.

The Fine Print: Contest entries must be received by August 15th. Winner announced September 1. Enter as many APC UPS units as you'd like. Each entry must include a photo and complete entry form. Trip dates subject to hotel and airline availability. APC employees not eligible to win. Winners will be profiled in an upcoming issue of Currents. Expenses limited to \$200 per day. APC will pay for round-trip airfare (departure points subject to airline exclusions), three nights accommodation, four days car rental, one trip via ferry to and from Block Island.



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE



DEPT. A8-CR
132 FAIRGROUNDS ROAD
PO BOX 278
WEST KINGSTON RI 02892-9906



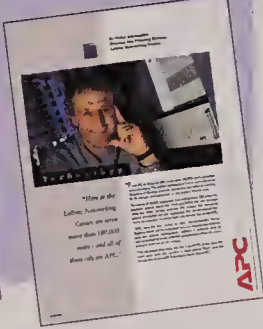
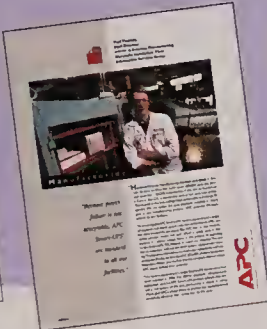
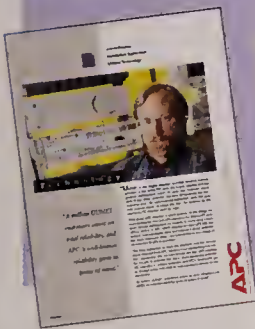
APC in Action Flyers: Customers Tell Their Tales of Power

Order flyers now: 888-289-2722, ext. 8182 or use the form on the back. No limit on amount ordered.

Part#	Flyers
DSN-0128	America II Corp
DSN-0129	Anahuac University
DSN-0130	Self Advanced Comm
DSN-0132	Centre REinsurance
DSN-0134	GeorgiaNet Kiosks

DSN-0158	Jet Propulsion Labs
DSN-0165	Harley Davidson
DSN-0137	Cisco
DSN-0138	UUNet
DSN-0139	wwwPassport
DSN-0140	Wachovia
DSN-0141	Tillinghast, Licht & Semonoff
DSN-0145	MetLife
DSN-0147	Honda
DSN-0148	Softbank

DSN-0135	Exec PC
DSN-0144	Maryview Medical Center
DSN-0138	Entex Corp
DSN-0146	Ms Janice Duran
DSN-0159	Bay Networks
DSN-0162	Liebniz Corp.
DSN-0158	Bombay Company
DSN-0188	Cabletron



Get info faxed right to your desk!

Document Description	Doc #
Smart-UPS 3G	1600
Back-UPS Pro	1400
Back-UPS	1200
PowerChute plus	2000
List Pricing	2400
UPS Sizing Guide	2300
Smart-UPS XL	1620
Matrix	1700
Smart-UPS vs. Back-UPS	1011
UPS Accessories	2100

Call and follow
recorded
instructions to
receive a
complete
catalog of lit-
erature avail-
able by fax.



FREE Posters Make a Point!



1. Clear Surge



11. Crash LAN



10. ProtectME!



7. Lightning

Order Posters Now!

APC offers FREE 24" by 36" posters: Please enter the Part Number on other side of this form.

Poster	Part#
1. Clear Surge	898-0128
2. Back-UPS	898-0116
3. Back-UPS Pro	898-0328
4. Smart-UPS	898-0397
5. Smart-UPS RM	898-0828-A
6. Plug N Play	898-0585
7. Lightning	898-0129
8. Bulletproof	898-0413
9. Geek & girl	898-0406
10. Protect ME!	898-0689-A
11. Crash LAN	898-0347
12. Hairdryer	898-0407

APC Currents Fax Order Form



You can always find the information you need on the APC PowerPage™ ...

<http://www.apcc.com>

Check one or more items of interest below and fax your completed order form to 401-789-3710 For immediate response, call 888-289-2722, ext.8182

Special Limited Time Offers

(Phone and Address Correction Required)

☐ Address Correction?

Name

Reseller ID#

Title

Company name

Dept. / Mail Stop

Address

.....

City

State, Zip Code

Country

Phone

Fax

E-mail address

FREE Poster (Limit two per customer)/ APC in Action brochure (Unlimited amounts) See examples on back :

1.Part #

2.Part #

3.Part #

4.Part #

What brand(s) of UPSs and surge suppressors do you use?

.....

What brand(s) of servers do you use?

.....

How many UPSs do you buy per month?

How many servers do you have installed?

How many servers do you purchase per month?

Is this your first contact with APC? ☐ Yes ☐ No

FREE STUFF!

Complete the info at the left and check the free items below that interest you:

☐ **YES!** Send me a FREE Solutions 60-page Power Protection Handbook detailing the latest power protection information from from APC. Fold here

☐ **YES!** I'd like a FREE APC in Action brochure or poster. I have entered the part number at left.

☐ **YES!** I'd like a FREE Subscription to the PowerNews™ E-mail news service. I have included my E-mail address at left.

☐ **YES!** Send a FREE Symmetra information video.

☐ **YES!** I'd like to learn more about APC's products and services.

Please send me FREE, detailed information about these products:

☐ Back-UPS/Pro ☐ Back-UPS Office

☐ Smart-UPS ☐ Matrix-UPS

☐ Line-R ☐ SurgeArrest

☐ PowerChute ☐ PowerManager

☐ PowerNet ☐ ProtectNet

☐ NetShelter ☐ PowerAudit

☐ MasterSwitch ☐ Symmetra

☐ PowerView ☐ Trade-UPS

This is for ☐ home use ☐ business use Fold here

Happy Customers Get FREE APC T-Shirts!

8/97

If you've had an interesting experience/application with APC's products, fill out this card and send it in. If we use your story, you get a FREE T-Shirt. Please complete all contact information, including phone number. APC model number involved: _____

Can we print your story in our "Letters" section? ☐ Yes ☐ No



Total Power Protection in Action

APC's Total Power Protection:

- Maximizes productivity
- Minimizes support costs
- Increases uptime
- Protects valuable equipment and data
- Provides peace of mind

APC power protection keeps data flowing safely, whether it's on a home PC or a WAN. With APC you'll run through any power event and shield AC lines, phone lines and datalines from power problems. Use the checklist below and the color application icons to match your systems to APC solutions.

Protect the Path and Protect the Equipment

Home and Office

- ☐ AC Lines
- ☐ Phone Lines
- ☐ Datalines
- ☐ Phone Systems
- ☐ Fax Machines
- ☐ Electronic Registers
- ☐ Peripherals
- ☐ PCs



Peer-to-Peer Networks

- ☐ AC Lines
- ☐ Phone Lines
- ☐ Datalines
- ☐ Install Interface
- ☐ Peripherals (printers, modems, etc.)
- ☐ Workstations



Client-Server Networks

- ☐ AC Lines
- ☐ Phone Lines
- ☐ Datalines
- ☐ Install Interface
- ☐ Peripherals
- ☐ Client Workstation
- ☐ Dedicated Servers



Enterprise-Wide Networks

- ☐ AC Lines
- ☐ Datalines
- ☐ Phone Lines
- ☐ Peripherals
- ☐ Install Interface
- ☐ Servers
- ☐ Web Servers
- ☐ Minicomputers and DASD Boxes
- ☐ Workgroups
- ☐ Smart Hubs
- ☐ Routers



SurgeArrest® List

SurgeArrest Notebook	\$29.95
Personal SurgeArrest 3 Outlet	\$24.95
Personal SurgeArrest 3 Outlet with Tel	\$34.95
Personal SurgeArrest 3 Outlet with Coax	\$34.95
Personal SurgeArrest 7 Outlet	\$29.95
Personal SurgeArrest 7 Outlet with Tel	\$39.95
Professional SurgeArrest 7 Outlet	\$49.95
Professional SurgeArrest 7 Outlet with Tel	\$59.95
Professional SurgeArrest 7 Outlet with Coax	\$39.95
Network SurgeArrest 3 Outlet	\$39.95
Network SurgeArrest 3 Outlet with Tel	\$69.95
Network SurgeArrest 7 Outlet	\$59.95
Network SurgeArrest 7 Outlet with Tel	\$89.95

ProtectNet® Family List

Data line surge suppressors, starting at:	\$34.95
---	---------

PowerManager® List

PowerManager	\$119.99
PowerManager with Tel	\$134.99

Line-R® List

Line-R 600	\$179
Line-R 1250	\$269

Back-UPS® List

Back-UPS 200	\$119
Back-UPS 280	\$139
Back-UPS 400	\$199
Back-UPS 450	\$254
Back-UPS 600	\$359

Back-UPS® Office™ List

Back-UPS Office	\$199.99
-----------------	----------

Back-UPS® Pro List

Back-UPS Pro 280 PNP	\$199
Back-UPS Pro 420 PNP	\$339
Back-UPS Pro 650 PNP	\$419
Back-UPS Pro 1000	\$589
Back-UPS Pro 1400	\$759

Smart-UPS® List

Smart-UPS 250	\$299
Smart-UPS 400	\$399
Smart-UPS 420	\$379
Smart-UPS 450	\$399
Smart-UPS 620	\$459
Smart-UPS 700	\$499
Smart-UPS 1000	\$699
Smart-UPS 1400	\$879
Smart-UPS 2200	\$1429
Smart-UPS 3000	\$2599
Smart-UPS 700RM	\$649
Smart-UPS 1000RM	\$829
Smart-UPS 1400RM	\$1079
Smart-UPS 2200RM 3U	\$1849
Smart-UPS 3000RM 3U	\$2679
Smart-UPS 700XL	\$799
Smart-UPS 1000XL	\$879
700XL/1000XL Battery Pack	\$399
Smart-UPS 2200XL	\$1699
2200XL Battery Pack	\$499
Smart-UPS 1400XLT	\$1999
Smart-UPS 2200XLT	\$2299
Smart-UPS 3000T	\$3149
Smart-UPS 2200RMXL	\$2359
Smart-UPS 2200RMXL Battery Pack	\$799

Matrix-UPS™ List

Matrix-UPS 3000	\$3599
Matrix-UPS 5000	\$5299
SmartCell™	\$599
SmartCell XR	\$1399

Symmetra™ List

Symmetra MiniFrame	Please Call for Info
Symmetra MasterFrame	Please Call for Info

NetShelter™ List

NetShelter premium enclosure	\$1999
NetShelter expansion rack	\$1699
Compaq Mounting Rails	\$149
HP NetServer Mounting Rail Kit	\$49
Hardware Kit	\$39
Blanking Panel Kit	\$79
Standard Duty Fixed Shelf (to 110 lbs.)	\$99
Heavy Duty Fixed Shelf (to 220 lbs.)	\$129
Sliding Shelf (to 75 lbs.)	\$199
Cantilever Shelf (to 40 lbs.)	\$59
Keyboard Drawer	\$230

PowerChute® Family List

Software solutions, starting at:	\$69
----------------------------------	------

PowerNet® SNMP Family List

PowerNet SNMP Adapter for:	
10 Base-T Ethernet (SmartSlot™)	\$399
Token Ring (SmartSlot™)	\$699

PowerNet SNMP Agent for:	
OS/2	\$169
UNIX	\$219

PowerNet SNMP Manager for:	
Novell ManageWise	\$199
HP OpenView for Windows	\$199
HP OpenView/SunNet Manager/Cabletron Spectrum/IBM NetView on UNIX	\$499

UPS Accessories List

Share-UPS™	\$349
PowerView™	\$249
SmartSlot™ UPS interface Expander	\$149
SmartSlot Measure-UPS II (Temp.)	\$149
SmartSlot Measure-UPS II (Temp.&Humid.)	\$199
SmartSlot Expansion Chassis	\$75
SmartSlot Call-UPS™ II	\$159
SmartSlot Relay I/O Module	\$179
Control-UPS/400™	\$399
Measure-UPS Switch Kit	\$99

MasterSwitch™ List

MasterSwitch	\$699
--------------	-------

Services List

PowerAudit™	Please Call for Info
On Site Service	Please Call for Info
Trade-UPS	Please Call for Info
Warranty Extension	Please Call for Info
Battery Replacement	Please Call for Info

For more information, please contact APC at 888-289-2722 ext.8182, fax 401-789-3710, or E-mail apcinfo@apcc.com

Peripherals

SurgeArrest
ProtectNet™
PowerManager

Workstations

Back-UPS®
Back-UPS® Office™
Back-UPS Pro®

Servers

Smart-UPS®

Datacenters

Matrix-UPS®
Symmetra®

Software

PowerChute® plus

Accessories

PowerNet® SNMP
UPS Accessories

APC
AMERICAN POWER CONVERSION
132 Fairgrounds Rd.
West Kingston, RI 02892 USA

APC in Action

"We have 800 offices in 125 countries. APC supplies the UPS systems that protect our computer rooms against power failures."

Technology

*Erik Ubels
IT Manager
Deloitte & Touche*



"Deloitte & Touche Tohmatsu International, is one of the world's 'Big Six' accounting, tax and management consulting firms. We have 800 offices in 125 countries and employ approximately 60,000 people. That includes 60 offices and about 3,000 employees in the Netherlands alone. The Amsterdam office is responsible for planning the IT strategy for the entire European office network as well as the implementation of IT systems at the Dutch offices.

"In the past three years, internal automation at Deloitte & Touche has been entirely dominated by standardization, with far-reaching consequences.

"All computer rooms at Deloitte & Touche have a two-metre high computer cabinet. All these cabinets, however, contain at least one component supplied by a single manufacturer: APC provides the UPS (uninterruptible power supply) systems that protect our computer rooms against power failures.

"APC has an excellent reputation. We have been using their products since 1986 and always been our policy to stick with a product if we're satisfied with it. APC's UPS systems continue to provide optimum protection for the nerve center of our computer system. We have integrated them with our Compaq equipment. Loss of data as a result of a power failure would be disastrous for a company like Deloitte & Touche. That is why we only install equipment we rely on 100%.

"APC's UPS systems have an added advantage. They are intelligent. Even the first version of these UPS systems took the fileservers into account if there was a power failure. Also, they are SNMP-manageable, which makes systems management a whole lot easier. Because APC supplies a complete product range comprising hardware and software, it can protect the entire network environment."

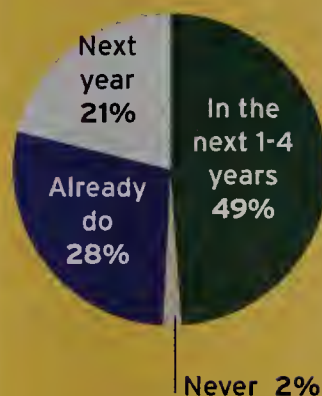
APC
AMERICAN POWER CONVERSION

The Enterprise Network

LANs ♦ WANs ♦ Network Management

Briefs

When will companies invest in knowledge management applications?*



*Groupware that holds the intellectual property of a company in a shared application

Base: 650 IS professionals

Source: Delphi Consulting Group, Inc., Boston

Wolfpack beta

Microsoft Corp. has released the second beta of its clustering software code-named Wolfpack. The Redmond, Wash., software giant said the Microsoft Cluster Server (MSCS) will ship bundled with Windows NT 4.0 Enterprise Edition due later this year. Microsoft is shipping a new version of the MSCS Software Development Kit and application programming interface specifications to help developers create applications that take advantage of the clustering software. MSCS runs on Windows NT Server 4.0 with Service Pack 3 installed. The final release of MSCS will ship by the end of the summer, a Microsoft spokesman said.

LAN-based modem

Shiva Corp. in Billerica, Mass., recently released Shiva Dial-Out software for Microsoft's Windows NT Workstations on networks outfitted with Shiva's remote access server. The software lets PCs make outgoing modem connections, which eliminates the need for individual modems and telephone lines. Shiva customers can download it for free from Shiva's World Wide Web site at www.shiva.com.

Reining in NT servers

► Management issue raises debate over tools

By Patrick Dryden

SOONER OR LATER, information systems managers will want to gain better control of Windows NT servers throughout their networks. The timing depends on the amount of pain they are willing to endure before implementing the appropriate management tools.

Here's the situation. With Windows NT servers proliferating, IS managers are beginning to crave a way to maintain them all without expending too much time and expertise.

The problem is that operators must call each server to check its performance, make sure vital business applications are still running or reset passwords, for example. Such routine tasks can devour staff time where hundreds of far-flung servers are in use.

Fortunately, tools have be-

come available this year that enable one operator to manage multiple Windows NT servers simultaneously.

But potential users must balance their tactical needs — the need to fix the problem right away — with their strategic di-



rection to manage everything through one integrated tool kit.

"We're looking at two years to get our enterprise management platform working, but I have short-term needs to manage the NT world right now," said Kurt

Guerrero, a senior network analyst at Northern Trust Corp. in Chicago.

The multibank holding company has selected TME 10 from Tivoli Systems, Inc. to manage networks, systems and applications for 7,000 local users and 4,000 more worldwide.

Consultants and industry ana-

"TME 10 is right around the corner, so adding new point products now is a tough sell."

— James Brown, NationsBank

lysts say IS groups can hope to reduce complexity, staffing and total costs by migrating to enterprise managers such as TME 10, Unicenter TNG (The Next Gen-
NT server, page 50

Virtual private network saves firm big money

By Bob Wallace

DESPERATELY SEEKING a way to let customers access its ordering process, Omron Electronics, Inc. set out last year to find a network that was afford-

able and efficient.

In the end, Omron not only saved money, but sidestepped the obvious answer and took a chance on an emerging networking scheme. The company expects to save \$110,000 annu-

ally in communications costs by choosing a virtual private network (VPN) rather than building and managing its own wide-area network.

The Schaumburg, Ill., electronics firm chose an Internet service provider to support its first network. Omron said the network has doubled business in the short time since sites starting coming online.

Omron is a worldwide manufacturer of factory automation and electronic components for commercial and consumer products. The firm does business with manufacturers of all sizes and companies that use bar code readers.

VPN BENEFITS

Although users must design, build and manage WANs, they need only sign up with a service provider to use a slice of its backbone bandwidth as a VPN. Internet providers partition their networks to provide VPNs to many corporate users.

In this case, Savvis Communications Corp. in St. Louis sold Omron a lane on its national 45M bit/sec. Asynchronous
Virtual private network, page 50



Omron's Barry Voltz says the firm "needed a simple, affordable way" to let customers order equipment and check the orders electronically

WINDOWS NT 5.0

Users: Hype is nice, show us reality

By Laura DiDio

THE WAY Mike Sidell sees it, Microsoft Corp. could do users a big service by packing more tangibles into fewer customer briefings.

Sidell, senior manager of business systems in the electronic brokerage division at San Francisco-based Charles Schwab & Co., said his company is investing in Windows NT. "So I'd rather see real working products than hear about something that may or may not ship a year from now," he said.

Sidell was referring to the latest in a series of Microsoft events in the past few months that were designed to ignite users' interest in the upcoming Windows NT 5.0 — a product that is still more than a year away from shipping. Even so, users and observers acknowledged that the Redmond, Wash., software giant generates potential interest in its products just by talking about them.

In Seattle 10 days ago, Microsoft officials said the company's total cost of ownership initiative would halve the cost of maintaining networks based on Windows NT 5.0. The claim is based on a combination of four forthcoming technologies: the Active Directory database, self-repairing functions in future versions of the network operating system, the Zero Administration Kit and Intellimirror caching [CW, July 28].

Microsoft said the combination of these facilities will make it easier for users to access information and work collaboratively and reduce network administrators' management tasks. For example, the self-repair features will be able to replace missing system files.
Product hype, page 50

Users voiced concerns about Microsoft's history of oft-postponed deliveries.

NT server management raises debate over tools

CONTINUED FROM PAGE 49

eration) from Computer Associates International, Inc. or OpenView from Hewlett-Packard Co. Then central operators can apply a management policy across all Windows NT servers, for example, or to diverse servers.

But until the bank deploys TME 10, Guerrero will use AppManager from NetIQ Corp. in Santa Clara, Calif., a tool specifically designed to manage Windows NT servers.

SAVING TIME

When Guerrero needed to check the version of backup software running on 38 servers, he made one query through AppManager instead of spending five minutes connecting to each one and taking notes. "I had my report in the time it took to grab a soda, instead of working three hours," he said.

Another bank that plans to roll out TME 10 will use it first to centrally manage more than 200 Windows NT servers. That won't happen until mid-1998, but Windows NT administration isn't a problem, said James Brown, senior vice president at NationsBank Corp. in Charlotte, N.C.

"TME 10 is right around the corner, so adding new point products now is a tough sell," Brown said.

Some organizations hope to gain an enterprisewide edge more quickly by opting for Unicenter TNG. The suite can require less implementation effort because it offers a self-contained set of highly integrated tools, according to users and analysts.

In just three months, Shared Medical Systems Corp. reduced the number of staff needed to manage 45 internal Windows NT servers from seven to three through Unicenter TNG, according to Larry McDermott, manager of remote server management at the Malvern, Pa., company.

"We'll need this kind of efficiency to manage NT-based services we launch for customers who don't have their own support staff," McDermott said.

Whether sooner through point products or later through an enterprise manager, IS leaders "have to put a stake in the ground and put something to work," Guerrero said. "The longer you wait, the more tools you'll pass by without getting anything done." □

Product hype does little to fuel migration

CONTINUED FROM PAGE 49

and the Intellimirror caching scheme will mean less system downtime, Microsoft officials said.

Users applauded such efforts, but some voiced concerns based on Microsoft's history of oft-postponed deliveries.

Some said they are more concerned with Windows NT's current capabilities. Others acknowledged that although Microsoft still has a long way to go before it fulfills its promises, they are committed to migrating to NT 5.0 — or are intrigued by the possibility.

WAIT-AND-SEE APPROACH

Sidell said he is holding off. He said his firm will realize greater return on its investment by postponing an upgrade from its 200 Windows NT 4.0 servers. "Windows NT 5.0's Active Directory doesn't provide enough of a performance gain to justify the cost of upgrading," he said.

Another executive, David Soetebier, vice president of research at Boatman's Trust Co. in St. Louis, said Microsoft is making progress in a long-term quest to



Charles Schwab's Mike Sidell says he would "rather see real working products than hear about something that may or may not ship a year from now"

reach enterprise heights with Windows NT.

Soetebier said Microsoft is "still a PC company trying to be an enterprise company, and Microsoft still has a lot of work to do." However, he said his company expects to migrate to Windows NT 5.0 when it ships.

Michael Crowley, vice president and chief information officer at Rich Products Corp. in Buffalo, N.Y., has a heterogeneous environment that includes Novell, Inc.'s IntranetWare, Windows NT Server and Unix. For now, Crowley said he is satisfied with IntranetWare, but he said Microsoft's cost-of-

ownership push could lure him to switch.

The total cost of ownership "is a very enticing carrot. But I don't make any decisions until a product is commercially available and we can test it and determine whether there's a good reason to switch," Crowley said.

Even if Microsoft doesn't present tangible products, its briefing events make an impact, said Clay Ryder, an analyst at Zona Research, Inc. in Redwood City, Calif.

"These events are really for those willing to sit down, listen and get a glimpse of the future," Ryder said. □

Virtual private network saves firm big money

CONTINUED FROM PAGE 49

Transfer Mode highway. Savvis maintains such lanes for others, as well. Users can provide the necessary data access equipment to get data on the highway.

Omron needed a network to let customers access the firm's AS/400 at corporate headquarters. It would be accessible at Omron's main sites, or customers could dial in to the network.

"We needed a simple, affordable way to let our customers order equipment and check those orders electronically," said Barry Voltz, manager of information services at Omron. "We spent a good deal of time checking our options."

Omron considered building its own WAN but estimated it would cost \$360,000 per year for communications costs alone. "That doesn't include the salaries of staff I'd need to hire to run our own WAN," Voltz said. The Savvis package came

in at \$250,000 per year and was much simpler.

"The VPN will also enable traveling Omron employees to visit any office in the U.S. and access the network as if they were sitting at their own desks," Voltz said. Every machine has its own identification, which it can use anywhere on the VPN.

BANDWIDTH BOOST

If bandwidth gets to be a problem, Omron can call Savvis and have them increase it between remote sites and headquarters from fractional T1 to T1. All network sites have access to the Internet via the Schaumburg hub.

The electronics firm considered proposals from MCI Communications Corp. and IBM, but it found them far too expensive and with various shortcomings. Voltz said he considered just running everything over the Internet, but he had security concerns.

Security is a big concern with VPNs, too, experts said.

"The first big question about VPNs is how are you going to handle security because it's a fundamental issue that users need to address beforehand," said Robert Powers, chairman of the Technology Policy Council at the U.S. unit of the Institute of Electrical and Electronic Engineers, Inc. in Washington. "Encryption is a must."

Voltz said workers encrypt all their Notes mail before transmitting it over the VPN. Omron also uses a hardware/software security firewall to lock out potential intruders.

The first phase of the VPN plan involves installing access in 10 locations across the country. The network will be configured in a star topology, with Omron's headquarters located in the middle. In later phases, the network will expand to Canada and South America. □

NEW PRODUCTS

ARESCOM, INC. has announced the Apex 1100, a high-speed Integrated Services Digital Network (ISDN) Basic Rate Interface access router.

According to the Fremont, Calif., company, the Apex 1100 allows an unlimited number of Ethernet LAN users to access a WAN via a single ISDN line. Apex Manager software is included to simplify configuration and line management.

The Apex 1100 costs \$679.

Arescom
(510) 445-3638
www.arescom.com

CINCO NETWORKS, INC. has announced NetXRyPro/100S, a Fast Ethernet network monitoring and analysis tool that runs on Windows 95 and Windows NT PCs.

According to the Pleasanton, Calif., company, the single-channel tool can monitor Fast Ethernet traffic at

120,000 packet/sec. and identify network nodes that generate Ethernet errors.

The price is 4,495.

Cinco Networks
(510) 426-1770
www.cinco.com

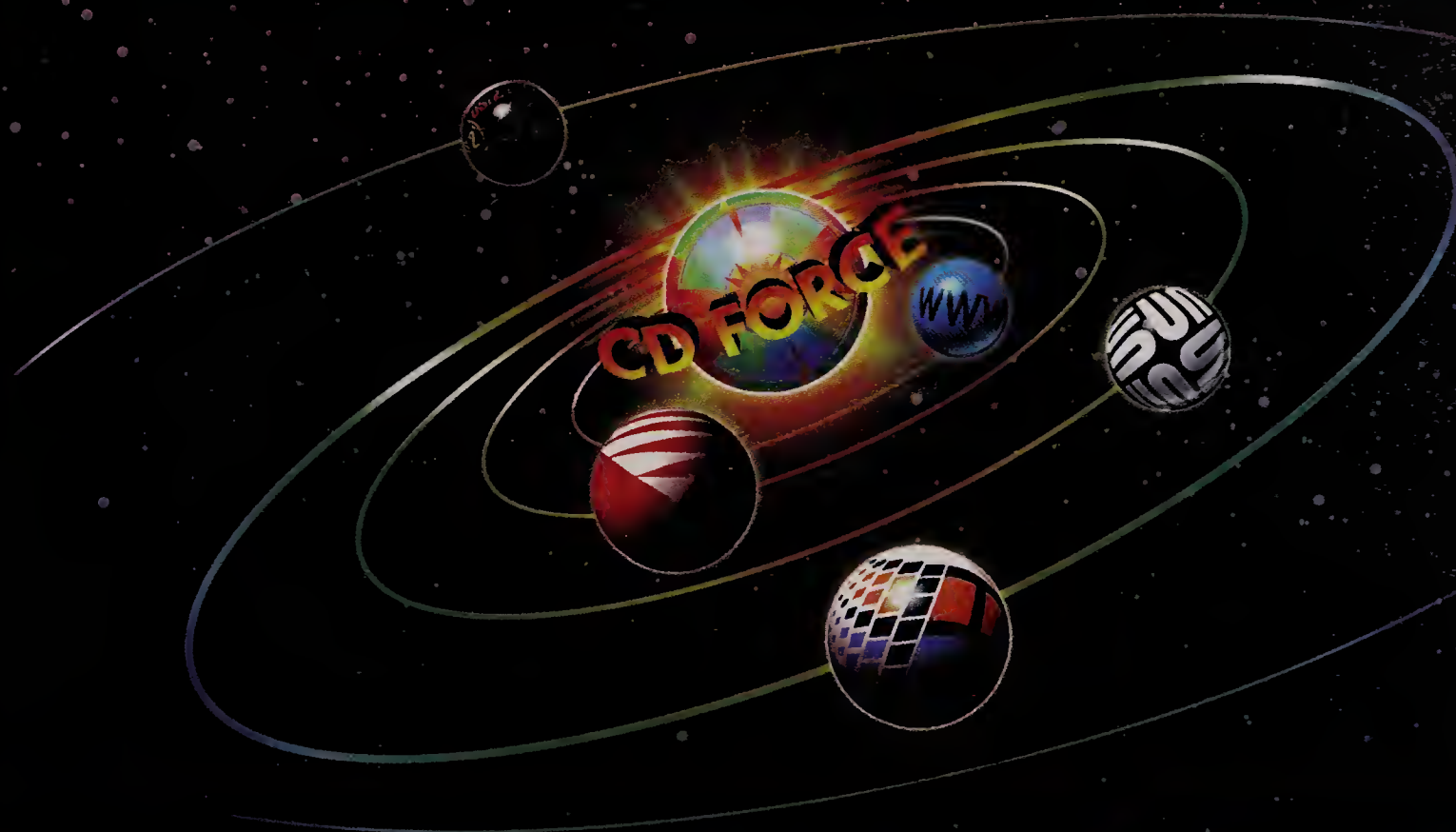
MICROPLEX SYSTEMS LTD. has announced NetworkEye-Colour Version 1.1, server software that can connect color digital cameras from Connectix Corp. to Ethernet LANs.

According to the Vancouver, British Columbia, firm, the frame server lets users on an Ethernet LAN access color images using browser software such as Netscape Communications Corp.'s Navigator or Microsoft Corp.'s Explorer.

Pricing for both the frame server and a Connectix color camera is \$349.

Microplex Systems
(604) 444-4232
www.microplex.com

CD FORCE: The first cross-platform CD-ROM network storage system in the galaxy

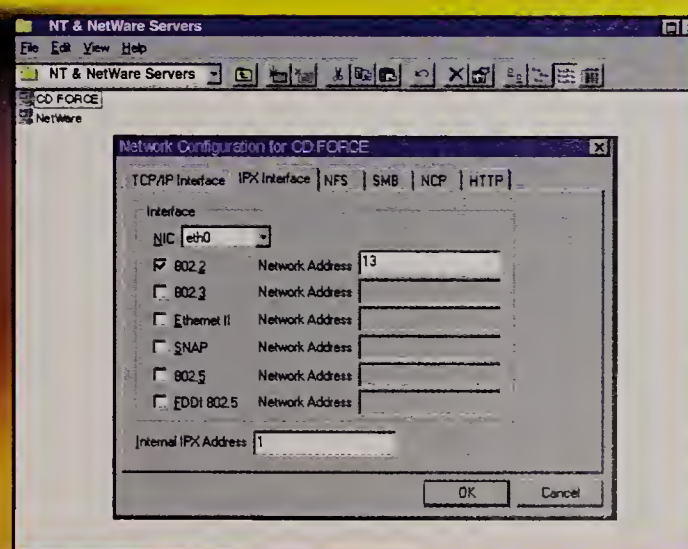


www.procom.com/cdforce

Now your Windows NT, UNIX®, OS/2 and NetWare/IntraNetWare users can simultaneously access CD-ROMs with the same ease and performance using CD FORCE. Exclusive features of CD FORCE include:

- NEW!** • Compatibility with NT Domain Services
- NEW!** • Search & Execute applications and remote management using a Web Browser
- NEW!** • NDS support for NetWare/IntraNetWare clients

CD FORCE combines Procom's legendary, enterprise-strength CD networking systems with revolutionary embedded software. CD FORCE also



CD FORCE provides centralized CD-ROM management across any network.

delivers unprecedented administrative power to manage your entire CD-ROM library, even via the Internet! Finally, cross-platform access to your CD-ROMs.

Call us today at 800-800-8600 x414 or visit our website at www.procom.com.




PROCOM TECHNOLOGY INC.

2181 Dupont Drive Irvine, California 92612

Tel: 800.800.8600 • Tel: 714.852.1000 • Fax: 714.261.7380

<http://www.procom.com> • E Mail: info@procom.com





***These companies just won
an award for their **smart**
You could congratulate them.
Then again, you could **hire*****

solutions. ***them.***

Around the world, Microsoft® Solution Providers compete for these awards that acknowledge stellar end-to-end solutions. Here's who to raise a glass to and, of course, what they did.

Best BackOffice™ Solution

Ericsson Inc.— Ericsson, the world's largest supplier of communications equipment, created a fully integrated suite of telephony applications providing flexibility and connectivity for enterprise PBXs.

Best Philanthropic Solution

Mallorn Information Systems Innovators— Developed an information management solution to help universities and associations effectively track members, suppliers, customers, staff and volunteers.

Best Solution by a Solution Developer

Pivotal Software Inc.— Developed Pivotal Relationship, an enterprise-wide customer interaction software that helps companies find, service, and keep customers.

Best Web Site Solution

Bay Dweller Inc.— Created an online catalog for Tucker Electronics that dramatically expanded customer base, doubled purchasing power, and reduced distribution costs.

Best Business Solution

Integrated Computer Management— Devised the world's largest Windows NT®—based imaging and document management solution for a big six accounting firm, helping them to eliminate the potential loss of critical data.

Excellence in Training

TeKnowlogy Education Center— Trained over 12,300 students on BackOffice technology and also developed pre-registration applications that help students in course selection.

Best Intranet Solution

Itautec Philco S.A.— Connected legacy mainframes of Brazil's second largest private bank, Itau Bank, to the Internet, expanding its customer base and reducing costs.

Best Migration to Microsoft NT and BackOffice

Sequoia Diversified Products— Trailblazed a migration path to move enterprises from legacy networks to Windows NT which significantly increased efficiency.

Partner of the Year

New Technology Partners, Inc.— Excelled as a systems integrator, consulting organization, software developer and trainer of Microsoft technologies; is one of Microsoft's strongest and most committed business technology partners.

Microsoft
SOLUTION PROVIDER

From applications to infrastructure, Microsoft Solution Providers can get it, build it, then maintain it and support it. To learn more about them visit

www.microsoft.com/solutions/
or call (800) 836-8282.

The data mart without the wait. Visual Warehouse™ for Windows NT® can be up and running in days, not months. It connects all leading databases on the back end and runs your favorite query software up front. The “middleware,” including DB2® for Windows NT, is integrated right out of the box, saving techs months of work. Cost savings versus most competitive products are equally dramatic. Hit www.software.ibm.com/vwinfo for proof.

The Software Minute

New ways to leverage IT assets in a connected world.


“...Aberdeen notes that IBM customers who desire pure Microsoft NT application environments, or best-of-both-worlds hybrid environments can turn to IBM for integrated systems solutions.”

For the full text of this Aberdeen Group white paper, and/or to see all of our products for Windows NT in one place, go to www.software.ibm.com/nt

August 4, 1997

A quicker way to extend existing systems to the Web. VisualAge® for Java™ is the first enterprise-aware, incremental-compile application development environment you can buy. Extends existing server data and apps to Java clients anywhere without rewriting existing code. Underline “without rewriting.” *InfoWorld* (4/7/97) called it “the best visual designer on the planet.” But you can get a copy and make up your own mind at www.software.ibm.com/vajava.

Hello. We hope you find these bits helpful. Look for news in this space every month. And for the full A-to-Z, anytime, click

www.software.ibm.com 

eNetwork™ Communications Suite provides enterprise-class access from virtually any desktop to any host over any network. It brings together IBM Personal Communications, today's most widely used emulator, and leading communications clients. (Lotus Notes Mail®; FTP 32-bit TCP/IP protocol stacks; Netscape Navigator browser; and more.) Single-source support for all the above makes life easier for IT staff as well as users. Visit www.software.ibm.com/ecs for a complete evaluation kit.

This free Java courseware on the Web is getting a ton of hits. From fundamentals (What is Java?) to business cases (How do we put it to work?) to resources for developers (How can I improve my skills?), you'll find most of what you're looking for in one place at www.ibm.com/java. Along with new product highlights from IBM, Sun, and other Java leaders.

Solutions for a small planet™



The IBM home page is located at www.ibm.com. IBM, Visual Warehouse, DB2, VisualAge, eNetwork and Solutions for a small planet are trademarks of International Business Machines Corporation in the United States and/or other countries. Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation. Java is a trademark of Sun Microsystems, Inc. Lotus and Notes Mail are trademarks of Lotus Development Corporation in the United States and/or other countries. Other company, product and service names may be trademarks or service marks of others. © 1997 IBM Corp. All rights reserved.

Software

Databases • Development • Operating Systems

Briefs

DATA WAREHOUSE SHOPPERS

Corporate business analysts need... direct access to data warehouses.

Casual users of analysis tools need... data marts with precalculated reports.

Departmental business analysts need... data marts oriented to one subject.

Senior executives need... custom-built executive information systems.

Source: Patricia Seybold Group, Boston

Prism deals

Prism Solutions, Inc. in Sunnyvale, Calif., has announced a buying spree aimed at expanding its data warehousing product line beyond the data extraction realm. Prism bought QDB Solutions, Inc., a Cambridge, Mass., maker of software for analyzing data quality, for \$7 million in cash and stock. It also acquired data replication software by Peregrine/Bridge Transfer Corp. in Austin, Texas. In addition, Prism bought its Australian distributor and will turn it into an Asia/Pacific marketing subsidiary. Rival Carleton Corp. in Billerica, Mass., has also been expanding its warehousing tools through licensing deals with other vendors, including QDB.

Axiom/Exchange deal

Axiom Corp. in Conway, Ark., last month announced that it will integrate customer information databases it develops and maintains for banks, credit-card companies and other clients with marketing campaign management software from Exchange Applications, Inc. in Boston. Axiom will train its engineers to install and support Exchange's ValEx, which enables marketing managers to design promotions that can be targeted at small numbers of customers who have similar buying habits.

Informix users get NT-friendly

CPI's Timothy Hufker: NT is a good environment for building easy-to-use touch-screen applications

By Craig Stedman
SAN FRANCISCO

INFORMIX SOFTWARE, INC. and its database users have been among the most devout worshippers at the Unix altar. But even they are starting to heed the call of Windows NT.

Getting serious about Windows NT was Informix's top priority at its user group conference here last month. And users

in search of lower computing costs plan to go along for the NT ride, although some said they aren't ready to entrust key corporate applications to the Microsoft Corp. operating system.

For example, CPI Corp. plans to combine Windows NT servers and Informix's OnLine database software to run a point-of-sale application it is developing for the 1,100 portrait studios it operates at Sears, Roebuck and

Co.'s retail stores.

The deep pool of Windows-savvy developers "had a big impact on our decision to go with NT," said Timothy Hufker, vice president of information systems at CPI in St. Louis. Because his developers routinely receive offers to jump ship, Hufker said he wants to make sure he can easily find replacements.

But there is "no compelling Informix, page 57

ONLINE ACCESS

Scientists use Java, CORBA to study DNA

By Sharon Gaudin

SCIENTISTS TRYING to find cures for cancer, heart disease and Alzheimer's disease should be able to get needed research information faster thanks to an object-based combination of CORBA and Java technologies.

Information technology managers at the European Bioinformatics Institute in Cambridge, England, are giving scientists worldwide direct online access to the largest database of DNA information in existence.

Instead of the current practice of submitting queries and having workers at the institute sift through the information in the database, more than 10,000 scientists in academic, pharmaceutical and biotechnology laboratories will be able to fire up their browsers and do more detailed searches themselves.

Online access, page 57

Legato bundles backup software with databases

By Nancy Dillon

LEGATO SYSTEMS, INC. has announced agreements with Oracle Corp. and Informix Software, Inc. to bring built-in online backup capabilities to database users.

Beginning in October, all Oracle8 and Informix 7.x databases for Unix and Windows NT will ship with a scaled-down version of Legato's NetWorker 5.0 backup and restore software. The software, installed on a single server, comes with a scheduler for unattended backups and the ability to execute online file and database backups for up to four attached storage devices.

Michael Schoolcraft, a programmer at World Partners in Smyrna, Ga., said Legato's an-

Legato, page 57

Vineyard cultivates J. D. Edwards apps

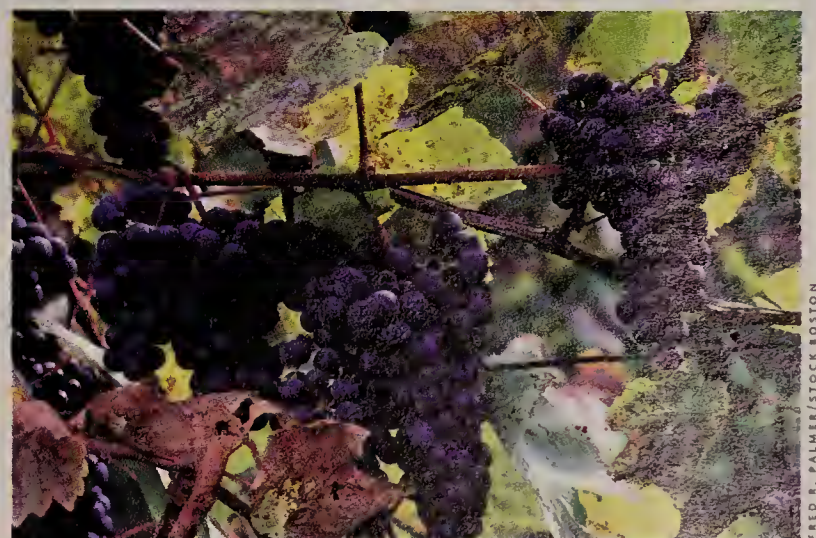
By Tim Ouellette

WITH THE HELP of what some might view as a vintage system, Robert Mondavi Co. has expanded its business into the world of international trade.

The Oakville, Calif., wine maker has counted on an AS/400 system running a suite of J. D. Edwards & Co. business applications since 1988. Back then, the Napa Valley company was making \$94 million per year; now the system handles nearly \$300 million per year in wine sales worldwide.

Exports make up less than 10% of revenue, and the company expects that to grow to 20% over the next 10 years.

In the past year, Mondavi has countered the recent California grape shortages by creating international partnership deals to expand its line of wine offerings, something largely untried



J. D. Edwards' World software has enabled Robert Mondavi Co. to expand its winery business

by other California wine makers. The strategy includes having overseas wineries grow grapes for Mondavi label wines.

To handle these changes to its business, Mondavi next year will upgrade from J. D. Edwards' World 6.2 suite to Version 7.3

and add a foreign exchange module, said Mary Trauernicht, systems support manager at Mondavi.

The move to World 7.3 opens the door for Mondavi to upgrade to OneWorld, J. D. Edwards' Vineyard, page 57

INTERNET COMMERCE EXPO

INTERNET COMMERCE • INTRANETS • EXTRANETS



Los Angeles

September 8-11, 1997

Los Angeles Convention Center

Because it's not business as usual any more.

Your future is tied to doing business on the Internet and the World Wide Web. Internet Commerce, Extranets and corporate Intranets have changed the world of business as we know it. Whether you're a vendor with an Internet solution for the Enterprise... or a corporate decision maker looking for productivity enhancing products, you need to be at ICE.

For Exhibitors: a proven to deliver event.

Thousands of corporate buyers will be there looking for the new products and services that make Intranets, Extranets and Internet commerce practical and secure.

**For Attendees: the coolest way to find
the hottest Internet solutions.**

Leading Internet vendors and solution providers will show you how to increase productivity and profitability using the latest Internet technology.

**Join your peers at this business-critical
Expo and Conference.**



Sponsored by:



Microsoft



OPEN MARKET

Deloitte & Touche Consulting Group

COMMERCE

ORACLE



NETSCAPE

UNISYS

DEMO



An International Data Group Company

Sponsoring
publication:

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

www.idg.com/ice

ICE, Internet Commerce Expo, and Internet Solutions for the Enterprise are service marks of International Data Group.

**Please put me on ICE! I would like more
information on:** ☐ Exhibiting ☐ Attending

CW

Name

Title

Company

Address

City/State/Zip

Phone Fax

e-Mail

111 Speen Street, P.O. Box 9107, Framingham, MA 01701.

Phone: 800-667-4ICE (4423) Fax: 508-370-4325

Informix users

CONTINUED FROM PAGE 55

reason" to switch CPI's corporate back-office operations to Windows NT, Hufker said. The company's Informix-based Unix applications are humming along smoothly, and NT still needs another year or two to become "a proven, mature product," he said.

Visa International has lobbied Informix to be more NT-friendly for the past 18 months.

— John Valente, Visa

The situation is similar in the city of Aurora, Colo., another Informix user. Looking to lower operating costs, officials in Aurora expect to turn to Windows NT for some lower-end database applications such as tracking constituent complaints, said Janice Richardson, manager of the city's systems and operations division.

But more critical government functions — including a new police and fire dispatch system that is due to be installed late this year — will likely stay on Unix servers. "NT just isn't mature yet," Richardson said. For now, she said, the city wants to limit it to applications "where

nobody dies because an ambulance doesn't get dispatched."

Even so, Informix executives are counting heavily on Windows NT to help pull the Menlo Park, Calif., company out of the abyss it fell in to with a \$140 million first-quarter loss. Informix sold only about \$20 million worth of NT databases last year, and it cited a lack of focused NT marketing as a key cause of the first-quarter debacle.

As expected, the company tried to demonstrate here that it cares a lot about NT by announcing plans for parallel database support, a new reseller marketing program and a series of performance benchmarks [CW, July 21].

John Valente, senior vice president of the Information Applications division at Visa International, Inc. in San Francisco, said the credit-card consortium has lobbied Informix to be more NT-friendly for the past 18 months.

The banks that make up the consortium "are telling us we need to be there [with Windows NT], and we passed that message on to Informix," Valente said. Visa's client/server spending is still weighted about 70-30 toward Unix, but resources are gradually shifting to NT, especially for low-end uses, he said. □

Online access to research

CONTINUED FROM PAGE 55

And they will have access to the information because developers are using the Java programming language and Common Object Request Broker Architecture (CORBA), the cross-platform plumbing that connects databases, clients and servers, to make the legacy information easily available.

The developers are using development tools and a server from Persistence Software, Inc. in San Mateo, Calif., to make the transition easier.

"Now, scientists can't get at the DNA information in our databases at all," said Graham Cameron, head of services at the institute. "When we get this up and running, it will be much more interactive. They know exactly what they need and can make much richer queries than we can for them. We always took the sledgehammer approach, but they can be much more finely tuned."

Graham said the institute mainly has Oracle Corp. databases but has many others from a slew of vendors. They hold information on about a billion different strands of DNA sequences. With so many databases, it is hard to access them if a user doesn't know exactly where the information is.

Graham and his developers used Persistence's Object Build-

EUROPEAN BIOINFORMATICS INSTITUTE

- Has the largest database of DNA sequences, with 1 billion of those sequences
- Helps scientists in their search of sequence mutations that cause disease
- Is a division of the European Molecular Biology Laboratory
- Is a nonprofit organization funded by 14 nations, including the U.K. and Israel

er to create wrappers that encapsulate chunks of the database information and enable them to be accessed and shipped to the front end. They also use Persistence's Object Server, which takes the query and does the digging. Object request brokers from Iona Technologies, Inc., Visigenic Software, Inc. and SunSoft, Inc. ship the information to the client.

PLATFORM-INDEPENDENT

The institute also uses Java on the front end to ship the information across the Internet to the scientists. Because the Persistence tools, CORBA and Java are all platform-independent, they can access information on any of the databases and ship it easily anywhere on the Internet.

"The Persistence technology makes it easier for them to

transform an old legacy relational database into virtually an object-oriented database without actually having to build a whole new database," said Karen Boucher, director of The Standish Group International, Inc. in Dennis, Mass. "With Persistence, they're throwing an extra layer over the database like a blanket. That helps wrap the information into usable objects."

Richard Browett, technical director at Valtech Ltd., an object-oriented consulting and training firm in London, said changing the way scientists access information should speed up research.

"By wrapping all the legacy information and letting scientists actually get their hands on it, we're serving them better," Browett said. "And that's the focus." □

Legato bundles software

CONTINUED FROM PAGE 55

nouncement was good news. He also called Informix's current backup system a "real pain." World Partners is an order clearinghouse for telecommunications carriers.

"It would be nice to have a [graphical user interface] and an automated scheduler. Right now, Informix's archive system is just not rewarding to work with," Schoolcraft said.

UTILITY NOT NEEDED

According to Legato, users no longer will have to integrate Legato modules with Informix and Oracle database utilities. The NetWorker backup software should inherit all configuration information from the database, officials at the Palo Alto, Calif.-based company said.

"I see a gigantic benefit to users in not having to write the [Enterprise Backup Utility] scripts for Oracle backup," said John Walton, a systems admin-

istrator at shipping giant Federal Express Corp. in Memphis. Walton backs up two Oracle databases that house 450G bytes of data using NetWorker and Legato's database module for Oracle.

"It would be nice to have a [graphical user interface] and an automated scheduler."

— Michael Schoolcraft, World Partners

The bundling deal could be a boon for Legato, said Paul Mason, a storage management analyst at International Data Corp. in Framingham, Mass. "The version of NetWorker that these users will get will be perfectly

adequate for a first installation and will provide an entry point into Legato's breadth of multiplatform products," he said.

But according to Patricia Adams, a senior storage analyst at Gartner Group, Inc. in Stamford, Conn., NetWorker may not be something new users need right away.

"Everybody's data is growing. If users implement an intranet today, they may see their data expand by 50%, and this might make enhanced backup something that they need six to 18 months down the line," she said.

"Integration of a good backup system into Oracle could be useful to me in the future because it would mean I wouldn't have to go through a third party," said Walt Wills, an MIS analyst at Inflation Systems, Inc., a manufacturer of air bag components in La Grange, Ga.

Wills manages a 500M-byte Oracle database that the company archives through data exportation to available storage resources. □

Vineyard cultivates apps

CONTINUED FROM PAGE 55

package that provides Internet access to AS/400 data. It also supports modules on other Unix, Windows NT or S/390 platforms if users want to expand.

Trauernicht said no platform decisions have been made yet, though Mondavi will upgrade to one of the RISC AS/400s that IBM is shipping this fall.

Competing applications running on Unix or Windows NT aren't in the cards yet for Mondavi, mainly because J. D. Edwards' World has let them expand the business and alter pieces of the system.

"There is nothing like standardization in the wine business," said Nancy Sellers, Mondavi's accounting manager. "We keep choosing J. D. Edwards modules because they offer us incredible flexibility and user-controlled definitions."

For example, Mondavi, like all companies in the alcohol beverage business, is highly regulated by federal, state and even county governments. The modification Mondavi made, which allows the wine maker to report wine taxes to the government, was important because "the government has to have a high comfort level with the way we move wine around," Sellers said.

Denver-based J. D. Edwards is also developing a European currency conversion tool, due next year, for users such as Mondavi to handle Europe's transition to a single currency.

"With our new international joint ventures in Italy, France and Chile and growth in export sales, it really expanded our needs for the new foreign currency module," said Tobin Ginter, financial reporting manager at Mondavi.

Mondavi's expanded use of World modules will also give more users direct access to financial data that was previously available only in paper reports. □

*t*here is a band of people who
live in your neighborhood.

They roam the streets.

And come into your businesses.

Some people claim they are prophets.

Others say they are maniacs

who have so many formulas

running through their heads

and scribble so many configurations

on the backs of envelopes and lunch receipts.

They advise.

Counsel.

They also deliver.

And then they come back.

They come back because

technology doesn't stop.

So they can't.

They work in partnership with Compaq.

They are your local Compaq Authorized Resellers,

and that's their job.

To find your Compaq Authorized Reseller,

call 1-800-410-8458.

COMPAQ





Is raw power all you need to build an enterprise-class solution? Unfortunately, that's all that some servers offer. So consider the HP advantage: the most powerful machine around—the lightning-fast HP 9000 V-Class Enterprise Server with 64-bit PA-RISC and new Hyperplane Technology... plus the advanced features for resilience, integration, security and management with HP-UX, HP's enterprise class operating environment... plus mission-critical services that are planned, designed, and delivered to ensure your multivendor environment is available on a global, 24x7 basis... plus enterprise class storage technology! It's a total enterprise solution. See for yourself at www.hp.com/go/9000servers Capitalize on chaos.

Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Storage file server

Creative Design Solutions, Inc. in Santa Clara, Calif., has rolled out a low-cost, network-attached storage file server for Windows NT environments. The Plug & Stor 100 can be installed without shutting down the network or changing its configuration. It was designed for small offices and workgroups. It uses CD-ROM, disk or removable storage media and can be configured from a PC or a network computer using a World Wide Web browser. It costs \$1,349. "This is a pure file server," said Peter Harvey, Creative Design's chairman and CEO. "It isn't intended as a replacement for a [Windows NT] applications server."

MTI storage

MTI Technology Corp. in Anaheim, Calif., next week will announce the Gladiator 3200 ESS RAID Array, a midrange Unix disk storage system. The array includes an updated controller that doubles performance over the existing 3100 systems. The three-bay cabinet includes up to 2T bytes of data capacity and up to 8G bytes of read cache to speed user access to files. Prices start at \$472,520.

Bull Unix servers

Bull HN Information Systems, Inc. in Billerica, Mass., has announced Unix servers that run on IBM's AIX operating system. The Escala E two-way and Escala T four-way servers include PowerPC 604E processors, internal disk mirroring support and UltraWide SCSI controllers. Pricing for the servers start at \$15,170.

Midrange users weigh migration

► Year 2000 conversion forces hard choices

By Jaikumar Vijayan

THE YEAR 2000 issue is putting users of old minicomputers between a rock and a hard place.

Should they stay? A dearth of skills and software tools make date conversion jobs a bigger nightmare for midrange users, compared with their mainframe counterparts [CW, June 23].

Should they go? Users consid-

ering migration to newer computers face the cost and risks involved in migrating applications off trusted old platforms.

"Whatever we do, it is going to be a really major decision for us, because we are talking about applications that run our business," said Steve Pounds, controller at Security Forces, Inc., a provider of security services in Charlotte, N.C.

Security Forces, Inc. Charlotte, N.C.

Type of business: Supplier of security services

Type of system: Data General Aviiion based on Motorola 88000, Unix

Types of applications: Financial
Using the system since: 1982

Status: Only one vendor knows how to do the year 2000 conversion. Security Forces is undecided about whether to go ahead with the conversion or migrate.

Factors that will affect the decision: Migration means more application availability, capabilities and error-free software. But it involves unforeseen risks and costs.

The company, which has used a Data General Corp. minicomputer for 15 years, hasn't decided whether it wants to move to a new platform or try to fix the current one. Only one software contractor knows the application software well enough to do a conversion.

So, the company is examining a migration to a new system. But the still-unknown costs and risks of migrating core applications slows a decision. "We simply don't know what's on the horizon for us right now," Pounds said.

TOUGH CHOICES

For most minicomputer users, a successful migration to a new platform such as Windows NT means error-free software and easy availability of new packaged applications and capabilities. But getting there means making hard decisions now, analysts said.

For example, users such as Security Forces still run vital applications on older proprietary midrange systems. Those systems include minicomputers from vendors such as Digital Equipment Corp.'s VAX/VMS systems, DG's Eclipse platforms, Hewlett-Packard Co.'s HP 3000, IBM's AS/400 and Wang Laboratories, Inc.'s Wang VS platforms.

Typically, those systems have

Midrange users, page 62

Dell invests in Pentium II workstations

By April Jacobs
NEW YORK

DELL COMPUTER CORP. last week released its first line of Pentium II workstations, targeted at compute-intensive applications and priced to undercut the competition.

The Round Rock, Texas, computer maker based its three new workstations, all in the Workstation 400 family, on Intel Corp.'s Pentium II chip, which was announced in May. The Pentium II has been embraced as a high-performance desktop platform in the financial and engineering communities by companies such as Merrill Lynch & Co. and the financial service arm of Prudential Securities, Inc.

EXCHANGE SEAT

With that in mind, Dell rolled out its new machines at the Nasdaq Stock Exchange in New York. The exchange uses Dell servers to power online feeds to more than 400,000 users who receive its minute-by-minute trading and stock information

Dell, page 62

Need for speedy backup drives moves to tape

► DLT libraries less costly, more reliable

By Matt Hamblen

WITH THE DIGITAL storage world exploding due to data warehouses and larger graphics and video files, systems administrators are scrambling to find inexpensive ways to back up data quickly and reliably.

Tape storage, which has become much faster and more reliable to use — especially with the growing acceptance of digital linear tape (DLT) in the past year — is the answer for many administrators of midsize to large networks. And tape storage costs less than setting up a backup system using redundant

hard disk or optical technology, analysts said.

Recently, automated tape backup systems have become the rage for users of midsize systems, following a similar pattern in higher-end systems. Many vendors sell tape libraries,

**CLOSER
LOOK**
Tape
Storage

devices that have one or more drives and often dozens of cartridges that are exchanged by a robot mechanism.

Austen Green, a senior network analyst at KPMG Peat Marwick, a consulting company in London, has in-

stalled four DLT libraries from ATL Products, Inc. in Irvine, Calif. The libraries can handle his backup needs of 12T bytes, with plenty of room for growth.

"I come from a mainframe background and fully understand why a backup is necessary and why a good disaster-

Tape storage, page 63

1996 federal government hardware units purchased

Servers*	10,300
PC servers	35,900
Workstations*	44,000
PC desktops	473,500

*Unix

Source: International Data Corp., Framingham, Mass.

POPULAR MIDRANGE TAPE DRIVES

Product	1997 shipments*	Capacity	Transfer rate
DLT 4000 ¹	203,000	20G bytes	1.5M byte/sec.
Mammoth ²	122,000	20G bytes	3M byte/sec.
SDX-300 ²	50,000	25G bytes	3M byte/sec.
DDS-3 ³	499,000	12G bytes	1M byte/sec.
MLR-1 ³	50,000	13G bytes	3M byte/sec.

*Projected

Vendors: 1-Quantum, 2-Exabyte, 3-Various vendors

Source: Peripheral Research Corp., Santa Barbara, Calif.

Dell invests in Pentium II

CONTINUED FROM PAGE 61

services.

Nasdaq President Alfred Berkeley said high-speed processing, such as what is available on Dell's new workstations, is key for users who need to apply the knowledge they receive as quickly as possible on the trading floor or in advising customers.

"In this business, time really is money," Berkeley said, noting that high-speed computing has changed the way trading is done, not only by speeding up transactions, but by increasing them. "People used to hold on to stock, but now more people are in business just to trade it."

Processors for Dell's new Workstation 400 releases range from a single 200-MHz Pentium II to a dual 300-MHz Pentium II chip.

Dell faces stiff competition. It will compete with vendors such as Houston-based Compaq Computer Corp., which has the PW600, and Armonk, N.Y.-based IBM, which offers the Intellistation Pro M. Both are Pentium II-based machines. But Dell is playing the price/perfor-

mance game, pricing its Workstation well below the competition.

For example, the Workstation 400 with a 300-MHz processor costs \$7,278 — well below Compaq's PW 6000, which costs \$8,965. Both machines in-

clude a 21-in. monitor and identical hard drive and graphics configurations. IBM weighs in at the high end, pricing its Intellistation Pro M at \$9,975 without a monitor, according to a comparison study by International Data Corp. (IDC) in Framingham, Mass.

IDC also gave favorable ratings for Dell's entry into the market, particularly in terms of its competitive pricing. But IDC noted that it won't be easy for Dell to

move up the technical food chain.

Other analysts agreed.

"Dell is absolutely following on the heels of IBM and Hewlett-Packard as they enter in to the workstation business. IBM is clear and away the leader with its Intellistation, because they have the best offering in terms of systems management support," said John Dunkle, president of Workgroup Strategic Services, Inc. in Portsmouth, N.H. □

Midrange users

CONTINUED FROM PAGE 61

been used to run industry-specific packaged applications or highly customized software sold and maintained by independent software vendors and third-party resellers. With support for the highly specialized platforms dwindling rapidly over the years, there is little help available to handle year 2000 conversion tasks.

"But the effort to convert [such applications] to another platform is somewhat significant," said Lamar Logan, CEO at Logan Lumber Co. in Tampa, Fla.

Like other midrange users, Logan Lumber uses packaged software it purchased from an application developer more than a decade ago to run its financial programs on a Wang VS platform. The vendor hasn't upgraded the package in nearly eight years and hasn't committed to a delivery date or pricing on a year 2000-compliant version of the package.

But Logan Lumber prefers to make the existing applications year 2000-compliant rather than migrate to a new platform. The company has the source code to its applications and has hired a consultant to do the conversion work.

Donald Winterhalter, president of Aurora Systems, Inc. in Plaistow, N.H., which specializes in Wang VS systems, said tough year 2000 choices pervade the legacy midrange user shops. "On the one hand, [minicomputer users] would like to use the year 2000 issue as an excuse to go from old technology to new technology," Winterhalter said. "On the other hand, they are concerned that migration efforts this late in the game may not be as successful as they had hoped for," causing even bigger problems down the road, with less time to resolve them. □



Envision an enterprise that's

totally expandable,

infinitely scalable, completely compatible,

easily manageable, and entirely mobile.



Actual results may vary depending on usage. ©1997 Acer America Corporation. Acer and the Acer logo are registered trademarks, and Acer Altos is a trademark of Acer America Corporation and Acer Inc. Intel, the Intel Inside Logo, and Pentium are registered trademarks of Intel Corporation.

Tape storage draws midrange

CONTINUED FROM PAGE 61

recovery plan will pay off," Green said. "During the bombing two years ago in London's financial area, nine companies went out of business just because they could not restart their [information and related] operations."

At KPMG's London office, data is usually kept online with hard disk RAID systems for about six weeks, then moved to near-online optical storage systems and finally to tape after about eight weeks, Green said.

Hard disk and optical storage media would have cost KPMG many times as much as tape, which costs about \$90 for a 40G-byte cassette, Green said. Restoring a file from tape takes about five minutes.

But DLT doesn't appeal to everyone. Tony McGinnis, a staff engineer at Georgia Power Co. in Atlanta, said his company recently purchased an Exabyte 480 tape library from Exabyte Corp. in Boul-

der, Colo., which includes four drives and 80 tape cassettes that use 8mm tape. That tape costs less than DLT, he said.

McGinnis said Georgia Power bought the library primarily to perform unscheduled backups at night, instead of hiring a worker to perform the task. Before the library was installed, backups were done during the workday and administrators worried about potential network bottlenecks.

"Most of the data we back up tends to span beyond a 14G-byte tape, so the ability to automate helped solve that problem," McGinnis said. "The library has made life a lot simpler."

McGinnis oversees backup of real-time systems data, which is called upon at least twice a week, mainly for training purposes in handling Georgia Power's storage grid. After it has been online for 14 days, the data is kept on tape for a year.

McGinnis' decision not to go with DLT is interesting, analysts said, because so many users in the past year have bought DLT systems for their ability to quickly transfer data.

"Over the past year, it's been DLT and everything else," said Bob Amatruda, a senior analyst for tape storage at International Data Corp. in Framingham, Mass. "Backup windows are shorter, and people want to work around the clock, so the IS guys are in a pickle and have shorter times to backups, so there's a push toward the tape library."

Quantum Corp. in Milpitas, Calif., produces DLT for many manufacturers. Quantum officials said they will try to parlay DLT's success at the high end to midrange storage users. Tape product sales at Quantum jumped 117% in the fiscal year ended March 31, to \$728 million, company officials said.

SUPPLY AND DEMAND

It is in the midrange market where information systems administrators should be careful, because "people are racing out to buy DLT [and other high transfer rate] drives, but very few vendors can supply them," said Michael Peterson, president of Strategic Research Corp. in Santa Barbara, Calif.

Peterson said administrators need to be careful when purchasing any drive that boasts high transfer rates if their network servers, software and bus allow for only a fraction of that speed. "Most backups are at 1M byte/sec. or less, so why buy a 5M byte/sec. drive?" Peterson said.

Peterson said IS managers should build a relationship with a tape vendor to ensure good service and support and to build systems that emphasize the reliable recovery of data, not just backing it up as if it will never be used. □



KPMG's Austen Green:

"I fully understand... why a good disaster-recovery plan will pay off"

Introducing Acer's mobile client server solution — the new way to truly realize enterprise productivity.

By extending the enterprise into virtual offices, and with an increasingly mobile workforce, it becomes vital to communicate and access critical company information. Anytime. Anywhere.

Acer's Mobile Client Server solutions provide connectivity, security, mobility, accessibility, and manageability. And help you increase productivity and gain a competitive advantage.

As one of the world's largest personal computer and component manufacturers, Acer has state-of-the-art notebooks, desktops, and servers, like the new AcerAltos™ 300 server series featuring the Intel® Pentium® processor. Plus, the channel relationships to optimize your solution and the resources to provide single-call service and support.

Acer's Mobile Client Server. The new enterprise solution that's infinitely expandable. And ultimately the most productive.



With an industry leading 7-hour single battery* notebook, Acer is redefining mobile solutions.



With a new, affordable network-ready PC, Acer has a range of solutions that make sense.



All Acer servers, at every level, have manageability built-in.



Acer 

1-800-558-ACER & select option 2, 1
www.acer.com/aac/

Launch this decision support system for your I.T. team and match individual skills with your needs!

Announcing CareerAgent for intranets!

Now you can put the power of CareerAgent, the popular, internet-based career development tool right on your company intranet.

Your I.T. management can:

- View department-wide summaries of existing positions and career goals
- Compare existing positions and career goals to staff requirements
- Add company-specific structure to the career development process
- Place career development directly in the hands of each individual
- Increase awareness of management's investment in career development

Your I.T. staff can:

- Record and update work experience
- Plot and save revisable career goals and career path scenarios
- Assess skills needed along the specified career path
- Calculate and save a "skill gap" report identifying training needed for the specified career goal
- Locate needed training in an intranet version of the largest learning resources database on the internet
- Record interest areas to receive updates of newly available learning resources

You get two valuable databases:

- The Career Profiles Database, a continuously updated collection of the 148 roles, 139 technical, business, managerial and interpersonal skills and levels that comprise information technology
- The Learning Resources Database, an intranet version of the largest database of training and education services on the internet

CareerAgent's learning resources database

Can be customized with your company-specific resources and includes thousands of course listings from:

Learning Tree International
Wave Technologies
Hewlett-Packard Educational Services
Boston University Corporate Education Center
Interpersonal Technology Group
DPEC
Business Communication Review
American Research Group (ARG)
IKON
HOTT (Hands on Technology Transfer)
NIIT, Incorporated
The Center for Systems Management
New Horizons Computer Learning Center of Boston
Sybase/Powersoft Education
ESI International
Strategic Management Group, Inc.
CBT Systems
Televerde
Classic System Solutions, Inc.
Lockheed Martin Advanced Concepts Center
TeKnowlogy Education Centers
DCI
Jackson-Reed, Inc
Network World
And more coming soon...

For details, visit CareerAgent's internet version at <http://careeragent.computerworld.com> or call 1-800-343-6474, x6000 today. And make every career on your team what it should be: A well-planned solution to your staffing needs.

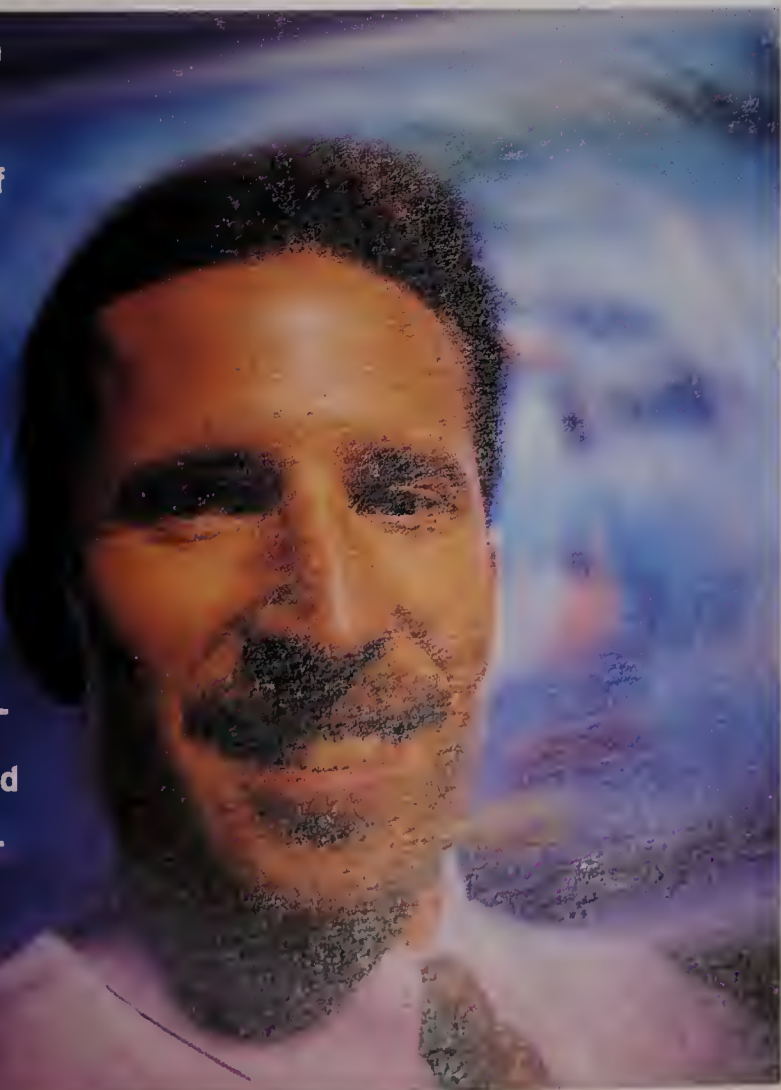
 **CAREER
AGENT**
careeragent.COMPUTERWORLD.com
CareerAgent is a trademark of COMPUTERWORLD and International Data Group

Managing

WHEN WORLDS COLLIDE

Your IS staff is all techie and you're not?
Don't worry, you CAN lead them. Just
don't hide your lack of technical smarts.

Wyette Spotts
came from out-
side IS to replace
a highly popular
manager at
Universal Under-
writers Group in
Overland Park,
Kan. His IS staff
didn't want him.
But Spotts
focused on his
strengths and
worked in the
trenches with
his staff mem-
bers. They even-
tually nominated
him for a perfor-
mance award.



BY KATHLEEN MELYMUKA

HE'S A NICE GUY, A SMART GUY, Har-
vard MBA, four years' successful man-
agerial experience, knows how to use a
computer.

Information systems is a mixed bag
of Unix, PCs, Macintoshes, internal
and external webs and banks of mo-

demons that support a worldwide, distributed company.

Just appointed to direct this shop, he takes the whole IS staff
off-site for a two-day, midweek teamwork exercise. While
they're gone, all the modems go down. For two days, the nation-
wide web of sales offices and all the development offices
around the world can't communicate.

"As a manager, taking them off-site was a smart thing to do,"
says Johanna Rothman, a principal at Rothman Consulting
Group, Inc. in Arlington, Mass. "But as an MIS manager, it was
a significantly less intelligent thing to do."

To those who say if you can manage, you can manage techies,

WHEN WORLDS COLLIDE

CONTINUED FROM PAGE 65

Rothman has one response: "You are so wrong!"

Still, these days it's common to see businesspeople leading technical people. "Using nontechnical leaders is symbolic," says Jerry Kanter director of the Center for Information Management

Studies at Babson College in Wellesley, Mass. "It shows that it's very important to have business management as the driving force. It's also effective if you get it right." Getting it right requires a quick study with the political and personal skills to plow the road for the team. It takes someone with intuition and candor who can recognize and adjust for strengths and weaknesses, someone who knows when to intervene and when to hang back. It also takes the sensitivity to understand what makes techies tick.

PAVE THE WAY

"Be clear that your job is to manage," says Naomi Karten, president of Karten Associates, a consulting firm in Randolph, Mass., that specializes in customer service. "Your job is to pave the way, to clear the roadblocks and make it possible for the technical experts to do what they need to do."

That's what Wyette Spotts did. He was plucked from the internal auditing department at Universal Underwriters Group in Overland Park, Kan., brought into IS and eventually put in charge of the claims system. "They didn't want me," he recalls of his technical team. "I was an auditor. They didn't think I belonged."

The team had problems. "Clients were unhappy, there was no process, no control of what was getting done, when, by whom and if ever," Spotts says.

But the manager he had replaced had been popular. "He knew the system, and I didn't know squat," Spotts recalls.

Because he knew so little about the system, Spotts concentrated on what he did know from his auditing experience, and that was the entire company hierarchy. "Because I was connected, I was able to get through some political and personal barriers to getting things done. That's partly how I got accepted," he says.

After six months, the staff that hadn't wanted Spotts nominated him for a performance award. Eight years and many

challenges later, Spotts is now manager of systems and programming at the company.

Kathy Kilduff is another nontechnical manager who got it right from the start. As a first-grade teacher in a saturated job market, she was hired by Honeywell, Inc. in the early 1980s to manage its new PC training and information center. "Later, I said to my husband, 'I wonder what an information center is,'" she recalls.

But she jumped right in. "You have to sort of be a sponge but also have a network of people who can be accountable for depth and breadth," she says. "I never sell myself as a technologist, but I am smart enough to know what questions to ask and where to get answers."

JOB 1: WIN THEM OVER

The first order of business for a nontechnical manager, Kilduff says, is to win the techies' respect. At Raytheon Co., she managed to do that while rolling out an enterprisewide human resources and payroll system.

Initially, the systems folks were underwhelmed. "I was dealing with the old guard who had been there 40 years, literally in the basement of the company, with no windows, dealing with a system they had dealt with their whole careers," she says. "And I'm saying, 'Boy, have I got something good for you!' And the tough old [operations] guys said, 'You think so.' So we made them part of the solution," she says.

Kilduff brought in the final vendor candidates for road tests and invited the operations guys up from the basement to try to crash the systems. "They all said, 'I'm going to break this,'" she recalls. "They worked double shifts. They stayed day and night. Once they really looked at the new hardware, it was like giving a child candy. I had hit on what they intuitively cared about anyway: technology."

Kilduff advises managers to "bridge that gap between us and them, and let everybody be expert in whatever they do best." It's worked for Kilduff, who has been managing technical people for 15 years and is currently IS program manager for customer service worldwide at EMC Corp. in Hopkinton, Mass. EMC produces high-end information storage systems.

Janice Wilcox at Advanced Technology Systems in McLean, Va., is a textbook

EARNING RESPECT

SOME TIPS FOR THE NONTECHIES:

→ **Never try to fake it. Don't pretend to know more than you do.**

→ **Don't be apologetic. Technology isn't your job; it's theirs. Your job is to manage.**

→ **Talk about what you expect from them and what they expect from you.**

→ **Listen to your people and ask them to explain what you don't understand. You'll be helping them communicate better as you learn.**

→ **Share your perspective. If you know something they don't know, tell them.**

→ **Make sure deadlines are realistic. Missed deadlines damage morale and resumes.**

→ **Give them room. Techies like nothing better than to be left alone to do their work.**

→ **Study. You need to learn at least enough to ask the right questions.**

→ **Find out who you can trust, and trust them.**

→ **Pick the person least like you as your second in command.**

→ **Sympathize with their problems. A lot of technology is so new even the techies don't have it down yet.**

→ **Ask them what they need and what they want for the present and future. Help them achieve their career aspirations.**

→ **Recognize and reward their contributions. Make sure that higher-ups recognize them as well.**

example of a nontechnical manager who complements her people.

As task leader for an intranet project at the U.S. Department of Housing and Urban Development, Wilcox doesn't delve into the nuts and bolts of technology.

At a meeting with clients, "a set of requirements will set off a bunch of bells in my head, but that may not mean much to Janice," says Keith Fosberg, a senior pro-

grammer analyst. "So we have to sit down afterwards and translate that into terms like 'use of personnel.'"

On the other hand, Wilcox handles the clients. For example, despite a Netscape Communications Corp. standard on the intranet project, one group of customers wanted to use Microsoft Corp. tools. "To those of us who have to build this whole thing, that's very annoying," Fosberg says. "So I [tell] Janice why it would cause problems, and she puts it all in nice, presentable order that the customer will understand — which is something I would not be terribly great at."

"Make sure you get it," Wilcox says. "Listen, and spit it back out in your own terms so they can contradict you or say, 'Yes, that's exactly what I mean.'"

ASSESSING THE PROBLEM

Things were already going wrong when Roccie Pisano at Computer Task Group, Inc. in Buffalo, N.Y., became site manager of a 40-person technical staff that supported the Eastman Kodak Co.'s worldwide help desk in Rochester.

"My initial reception was mixed at best," says Pisano, whose background is in small business. "The help desk is a stressful environment anyway, and people had been on the desk for years. They needed to move on to better themselves."

Pisano made it happen.

"I had been a help desk technician for four years when Roccie came," Diana Wenner says. "I had been through different managers of different technical abilities, but I hadn't had a working rapport with anyone where I had been motivated to try to do more."

"Roccie encouraged me. He said, 'You've got the potential to do more. Why haven't you? What can we do for you?' He's a very good motivator. He promoted me first to team lead and I said, 'I can't do it. I can't do it.' He said 'Yes, you can!'"

"I did that, and now I've moved on to help desk supervisor," Wenner says.

"I helped them at the expense of our own operation," Pisano recalls. "We were short-staffed, and it was very difficult, but we did it and stabilized. And that's helped me earn the respect of the staff."

The bottom line for nontechnical managers is getting everyone to understand that the project really isn't technical, says Al Walker, a principal at the consulting firm Towers Perrin and global head of its Human Resources Information Management project in Parsippany, N.J.

"The end of the game is cut our inventory, speed our products to market. It's a project to deliver outcomes, and IT is a part of that," he says. "The whole thing is really about leadership." □

Melymuka is a freelance writer in Duxbury, Mass.

COMPUTERWORLD

Want to learn more about how nontechnical managers and technical personnel can coexist peacefully? Listen to IS management expert David Foote this week at our Web site (www.computerworld.com).

IT MAKES OTHER NOTEBOOKS FEEL INADEQUATE.

Not in their widest dreams has anyone ever made a notebook like the new
Hitachi VisionBook Elite™. At 13.3" – the largest in its class by

23% – it's the most breathtaking view ever
offered on anything this thin,
light, and powerful. And with its
hyper-fast U.S. Robotics x2™
modem, and slim media filebase,
the Hitachi VisionBook Elite offers
functionality and communications
abilities unmatched by anyone. In short,
the highest development to date of the
Mobilized Computing™ concept. We

invite you to contact an Hitachi reseller
and see our panoramic vista.

Because if you're thinking of
getting anything else, you're not
thinking big enough.



SIGNIFICANT FEATURES:

Extremely thin (1.4") and light.

Super large 13.3" TFT display

(largest in its class), XGA resolution.

U.S. Robotics® 56K* x2™ modem – fastest in a notebook.

166MHz Intel Pentium® processor with MMX™
technology, 512K L2 cache.

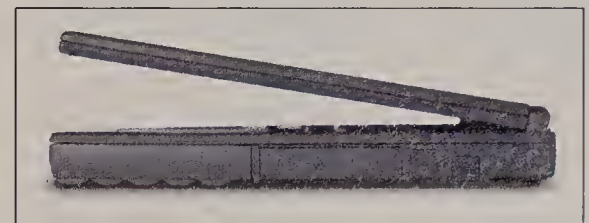
Detachable filebase with 10x CD ROM
and 3.5" floppy drive.

16MB EDO RAM, 2.1 GB hard drive.

Extended life Lithium-Ion battery.

Optional advanced port replicator.

Full-size keyboard.



Call 1-800-HITACHI
www.HitachiPC.com



©1997 Hitachi PC Corporation (USA). All rights reserved. Hitachi VisionBook Elite and Mobilized Computing are trademarks of Hitachi PC Corporation (USA), which may be registered in some jurisdictions. The Intel Inside Logo & Pentium® are registered trademarks of Intel Corporation. All other marks are owned by their respective companies. *All x2 products are subject to FCC regulations which restrict power output, current download speeds are limited to 53Kbps. Model shown is 8560 and specifications quoted apply to this model. Specifications and availability subject to change without notice.

CR 0104

HOW IS managers USE THE WEB



Some IS managers say they're more apt to go to the Web for amusement or general news than for the latest papers that are germane to their jobs

Browsing? Who has the time? IS managers are using the Web to find specific answers, create presentations and monitor the competition and the latest news

By Leslie Goff

IN HIS LAST-MINUTE preparations for a recent business trip to Chicago, Tom Lamb went online and downloaded to his laptop articles from his favorite newspapers and magazines. After the pilot signaled that it was OK to use personal electronic devices, Lamb spent his flight quietly reading.

What would have made most people late to the airport actually saved time and trouble for Lamb, senior director of information systems at Adelphia Communications Corp., a national cable systems operator in Coudersport, Pa.

The World Wide Web has eliminated television and print as his primary sources for daily news, Lamb says. He surfs his favorite Web sites — including *USA Today* and several vendor home pages — several times a day, every day. He uses a cable modem that can receive data at speeds up to 10M bit/sec., much faster than a dial-up modem.

"You need speed," Lamb says. "And a dial-up modem just doesn't cut it for a busy person. Content is useless without speed, because people don't want to wait around."

Lamb and other top IS guns say the Web is useful for gathering vendor news and product details, but Lamb says he also enjoys the advantage of having high-speed access to the Internet. Some of his peers in other industries say performance and content issues discourage them from using the Web on a regular basis.

Robert Spicer, executive vice president and chief information officer at Chevy Chase Bank in Chevy Chase, Md., is more typical. Because the bank doesn't have a firewall in place, Internet access is available only from a shared, dedicated PC, via a 28.8K

bit/sec. modem. Spicer goes online only a few times per month "for a quick answer to a very specific question," he says.

"I've really got to need the information if I go online during business hours, because it is so slow," Spicer says. "At home, it's different because I use PointCast and the other 'push' products, so I don't have to spend as much time online."

But IS managers don't rank repositories of IS management papers, professional IS association home pages, IS career sites and online computer publications high on their list of bookmarks.

Several IS managers say they use the Web more for amusement or to help spouses, children or friends than for business.

"I stay away from a lot of IS sites because they usually rehash stuff I've already read, and I can read [printed materials] a lot faster than the Web can present pages to me," says Tom Loane, CIO at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla.

He says he uses the Web several times a week to find product information and to view competitors' sites. For example, when Avis, Inc. recently launched an online booking system, Loane logged on to assess a feature-by-feature comparison with Alamo's Web-based application.

NECESSARY EVIL

Despite their gripes, IS managers who use the Web regularly also say they couldn't get along without it. No matter how often and for how long they log on, the Web gradually is becoming a tool they use to meet the high-pressure demands of their jobs.

The Web has emerged as a particularly good source for putting together convincing presentations, IS managers at all levels say. For example, Barry Gallant, a

project leader in the Engineered Materials sector at AlliedSignal, Inc. in Morristown, N.J., persuaded a user department to evaluate several different groupware platforms.

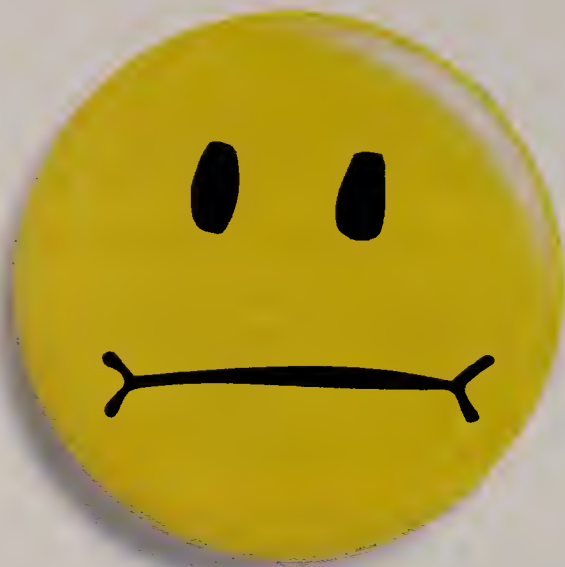
When Spicer's boss asked him to bring information about a potential business partner into a meeting that was starting in an hour, Spicer used the Web to put together 12 documents — copied and bound — with all the information the CEO wanted.

Dwight Muller, director of information services at Fallon Healthcare System, a health maintenance organization in West Boylston, Mass., says he collected a series of Web pages he found through the links at the College of Healthcare Information Management Executives home page (chime-net.org) to demonstrate for Fallon's end users how Web-based education, patient scheduling and other health care applications could meet critical hospital needs.

"Your orientation, your mindset, changes when you start using the Web because you know information is always available," says Sue Chichin, manager of the Infrastructure and Information Technology department at Chubb & Son, Inc. in Warren, N.J. She says she surfs extensively to find sites that support her role within Chubb's Diversity Task Force. The group is aimed at bringing more women and ethnic minorities into the company's workforce. Chichin uses the Web as a resource for technical questions and answers.

"Whenever anyone mentions something they need, I know I can get the information online," she says. "The issue is, will it be the right information?" □

Goff is a freelance writer in New York.



BEFORE.



AFTER.

“If you think, winning awards makes us happy, you should see what these services do for our clients’ moods.”

—Bruce Bond, President and CEO, ANS Communications

Our Virtual Private Data Networks and our Web Hosting Services are being acclaimed as the leaders in the industry. Frankly, we are honored, but not exactly surprised. ANS was the first to offer guarantees for these services. And ANS continues to be the premiere provider of

secure, reliable Internet and Intranet services to business. We ensure that our system is up and running so our clients can concentrate on “Having a nice day”. Call 800-456-8267, e-mail us at info@ans.net or visit our Website at www.ans.net.

HAPPILY EVER AFTER

ans
AN AMERICA ONLINE COMPANY

IT'S OPEN SEASON on information systems staff. With certain skills in extremely short supply, poaching employees has become the norm. So, what's an IS manager to do?

Here's my suggestion: Educate yourself and your employees about the tactics firms use to lure staff elsewhere. IS professionals are growth-oriented. They're looking for a chance to enhance their skills and their knowledge of new technologies. But many of the new jobs aren't as advertised.

BEWARE OF 'BAIT, SWITCH AND SUFFER'



LEILANI ALLEN

Sometimes, your prized project manager is really being sold a bill of goods. Here are some real-life examples you can share with your staff, so they don't assume the grass is always greener.

Cynthia was an experienced programmer/analyst. She liked the technical parts of the job, but really thrived on figuring out solutions to business problems. She had recently started taking business courses at a local college. A vendor who worked with Cynthia invited her to interview for a sales support position.

At the interview, Cynthia was told that business problem-solving was the key skill for the sales job. She also was told that the firm fully reimbursed tuition and actively encouraged employees to improve their skills. Cynthia was enthralled and took the job.

In practice, Cynthia found that the vendor pretty much had a "one-size-fits-all" technology solution. Rather than discover a customer's true needs, Cynthia was asked to just sell the customer on the company's products. And the firm sold heavily in the manufacturing area, in which Cynthia had absolutely no background. Any solutions she could offer were likely to be naive and shortsighted.

As for the tuition, Cynthia found that her travel schedule prohibited her from regular attendance at a course. She became disenchanted.

Hector was a network designer at a small IS shop. He had just completed a major project, redesigning the network to support a client/server environment. He took classes and was focused on being on the "cutting edge." He also liked the recognition he received, which gave him access to senior IS management.

But Hector worried that his skills were being wasted at such a small company. Having come from a Fortune 200 firm, he worried that he would soon run out of opportunities to be innovative. He also wanted to make more money. So when a friend's recruiter called, he responded.

The recruiter agreed with Hector that a small firm probably couldn't offer him many opportunities. Only large companies could afford to buy

the "latest and greatest" technical tools. Besides, he would have the chance to work with other experts. Hector didn't have to think twice.

But after a few months, Hector realized he had become a small fish in a very large pond. Previously, he was responsible for the whole network. Here, his team supported only a segment of it and one or two applications.

The company had recently invested in network monitoring software, and Hector was selected to learn the product in depth. But as the sole product guru, Hector was deemed "too valuable" to assign to other projects.

Buried in a much larger organization, Hector's light got little chance to shine. He quit within the year.

Pat was an IS manager with 10 years of experience in systems operations and development. A consulting firm contacted her about an offer it termed "too good to be believed."

The firm was looking for someone to manage a major technology implementation. She would have full project control, supervise a much larger staff (in-house as well as contractors) and interact with top-level executives in both firms. Although the salary was comparable to what she was making, the project bonus was defined as 50% of base.

Pat became disillusioned. The team members weren't in place and the client was reluctant to allocate them. Pat had to spend her first few weeks recruiting her own staff. She found out the project was considered a loser by the company; she was the third manager to have a go at it. Requirements were ill-defined, the lawyers were battling over the contract and the vendor supplying the technology wouldn't agree to delivery dates.

Within three months, the consulting firm reorganized, a new manager was brought in and Pat's role became that of chief analyst. A year later, the project was still struggling and no bonus was in sight.

KEEPING 'EM HAPPY

Of course, bad-mouthing your competition isn't enough to keep your best employees. People stay at a job when they are given the chance to do some

interesting and challenging work and when the company recognizes, appreciates and fairly rewards their efforts. All that sounds easy, but it isn't. A lot of IS work is tedious and repetitious, and our tendency is to have someone master one task and do it forever.

Instead, we have to ensure that staff members have enough variety in their work and the opportunity to learn new things. We need a reward system that combines monetary and nonmonetary rewards (for example, days off, telecommuting options or education opportunities) and public and private pats on the back. Managers should constantly ask: "What motivates my employees to stay? What would prompt them to leave?"

We have to demonstrate, every day, that we have the employees' best interest at heart and that we will help them meet *their* objectives, not just the company's objectives.

Finally, don't be afraid to discuss with your employees that every job has its ups and downs — including their jobs. The goal is to get them to examine all job factors, not just the one or two that are appealing, when opportunity knocks. The old adage still holds: If it sounds too good to be true, it probably is. □

Allen's column deals with the kinds of people issues managers face every day but are reluctant to discuss openly. Each is based on a real-life situation. The names and certain circumstances have been changed to protect confidentiality. Allen is a director at Tenex, a management consulting firm in Burlington, Mass.

COMPUTERWORLD

WANTED: SMART MANAGERS

What management technique do you use that you consider particularly effective? Send a brief synopsis, and we'll work with you to develop a case study for publication. Topics include: interviewing candidates, hiring and firing, counseling, handling conflict, planning, budgeting, controls and reporting — the whole gamut of management issues. E-mail Leilani Allen at lallen@tenex.com (no vendors or consultants, please).

Buyer's Guide

PRODUCT REVIEWS:

Collaboration and administration features are key for Communicator. And four push products show promise.

Beyond browsing, Netscape Communicator 4.0 unites the enterprise

BY HOWARD MILLMAN/SUMMARY: A comprehensive suite of integrated Web applications suitable for use in stand-alone, remote and networked environments. Advanced users can customize Communicator's appearance and behavior, and novices can use it right out of the box. The Professional version adds enterprise-level tools that enable centralized browser management and automated distribution of upgrades.

GET READY,

Navigator browser buffs, Netscape Communications Corp.'s recently released and aptly named Communicator 4.0 improves communication between machines as well as between people. Netscape will tempt you with an abundance of new groupware, collaboration, Internet access, site design and central administration features. And users of previous Netscape browsers can step in to the new version without returning to college. Version 4.01, which includes a fix for the so-called Danish privacy bug, is now available at Netscape's World Wide Web site.

Although Communicator 4.0 is a powerhouse, it also has flaws. For example,

configuring its wealth of features could be more intuitive.

Improvements over Netscape Navigator 3.0 include support for interactive page content via dynamic Hypertext Markup Language (HTML) and HTML positioning and layering, which lets developers specify the x, y and z coordinates of each page's elements. Communicator's more visually pleasing interface provides a cleaner, larger content area. Customizable tool bars materialize with a click of the right mouse button, which replaces the more traditional pull-down menus. If you hold the mouse pointer over the back or forward button, you summon a tool tip that lets you choose a page to jump to. You no longer have to go back one page at a time. A new go-to feature lets you jump back or forward to any page you have visited in the current session.

PERSONAL PROFILE

The "profiles" feature takes some of the headache out of dealing with systems shared by multiple users. Each user gets

a personal profile that remembers their bookmarks, newsgroups, electronic-mail address books and messages.

Communicator's three core components include Navigator 4.0, a much-improved version of Netscape's popular browser; Messenger, a successor to Netscape Mail and a much-improved E-mail client; and Collabra, Netscape's technology for real-time participation in internal company discussion groups and Usenet newsgroups.

The suite introduces other Internet applications, including Composer, which creates and publishes Web pages; and Netcaster, a "push" technology that transports selected information to the desktop. Another of Netscape's time-savers, SmartUpdate, helps speed the installation of browser plug-ins.

Of the two components in Netscape Conference, the shared whiteboard saves more time than Internet telephony wastes. Conference does an excellent job

of setting up Internet audio conferences, but the application is still hampered by the Internet's marginal audio quality and the extra nuisance involved in Internet-based audio. But it can eliminate long-distance telephone charges.

Communicator's Professional edition includes Netscape Calendar, which schedules meetings and tracks group events, and IBM's Host On-Demand, which enables 3270 emulation and mainframe connectivity. Netscape's AutoAdmin will let network administrators centrally manage and update networked PCs. Every time a user launches Communicator, it queries a central configuration file. If the values have changed, the user is asked if he wants to update his machine's configuration. Lightweight Direc-

Beyond browsing, page 72



REVIEW ►

Netscape Communicator 4.0



NETSCAPE COMMUNICATIONS CORP.

Mountain View, Calif.
(800) 638-7483
(206) 882-8080
www.netscape.com

PRICING: \$59, Standard; \$79, Professional. Contact Netscape for volume pricing.

PLATFORMS: Runs on 16 platforms

Beyond browsing

CONTINUED FROM PAGE 71

tory Access Protocol (LDAP) support lets users query multiple network, extranet and X.500 LDAP-compliant directories.

Messenger's improvements make it a worthy competitor to Microsoft Corp.'s Exchange and Lotus Development Corp.'s Notes. It provides context-sensitive menus and tool bars, which allow for easier sorting, filing and threading of messages, and instantaneous full-screen viewing. Support for Post Office Protocol 3, Internet Message Access Protocol 4 and Simple Mail Transfer Protocol assure compatibility with all major mail systems. Support for Secure/Multipurpose Internet Mail Extensions encryption provides peace of mind for organizations that want to take advantage of the Internet's global reach and low cost to exchange information.

Small but welcome features include a spell checker and user-defined rights that determine how much access a Java applet can have to the client computer's resources. Support for HTML messaging enables you to send an HTML- or text-formatted message to a recipient. That can help reduce the number of messages that take longer to open than to read.

Messenger also provides tools for advanced mail management, including access to multiple mailboxes and the ability to create multilevel filtering rules. Unfortunately, Messenger can't filter by message or attachment file size.

Netscape's newsgroup application, Collabra, is well integrated with Messenger. Collabra supports store and forward discussions over a network, intranet and Usenet groups.

Composer, an HTML authoring tool, also improves on the editor previously available in Navigator Gold. Like many of the HTML authoring tools now available, Composer insulates you from dealing directly with HTML tags. I prefer to write my own HTML code, but then I change the oil on my cars, too.

Composer turns in a credible performance at preparing and publishing pages. The appearance and eye appeal of the page depends more on the skill set of the designer than that of the program.

Netcaster, available free from Netscape's Web site, delivers selected pages from predesignated internal or external Web sites.

Despite the wide variety of useful features, a buy or upgrade decision involves more than assessing the capability of the browser technologies offered by Netscape and Microsoft.

At least for now, Netscape has seized the flag by moving beyond browsing to provide a full suite of competent tools to enable broad-based improvements in the way people and machines communicate. It provides an excellent solution for advanced users and administrators. Communicator's redesigned interface and fluid interapplication integration makes it an excellent choice to use in the enterprise and capable of challenging the feature set promised by Microsoft in its upcoming Internet Explorer 4.0. □

Millman operates Data Systems Services Group, an independent networking consultancy. He can be reached at hmillman@mcimail.com.

Questions to consider when choosing a browser and the likely choice to go with,

according to Tim Sloane, director of Internet infrastructure research at Aberdeen Group in Boston

Is free important? **MICROSOFT**

Do you need a full suite of Internet applications? **NETSCAPE**

Are you planning to deploy applications using CORBA/Internet InterOrb Protocol? **NETSCAPE**

Are you planning to deploy applications using Component Object Model/ActiveX? **MICROSOFT**

Are you concerned employees might execute applications that could corrupt the PC? **NETSCAPE**

Will you deploy Netscape- or Microsoft-specific services for directory mail, groupware or security? **DEPENDS ON ANSWER**

Is push technology a key technology you will deploy internally? **NETSCAPE**

Has your organization standardized on Microsoft on the desktop? **MICROSOFT**

Are you running NT with ActiveX? **MICROSOFT**

Are you running a multiplatform environment or NT with CORBA? **NETSCAPE**

Are there important sites that users access that are written specifically for one of the browsers? **DEPENDS ON ANSWER**

PEDDLE PUSH

BY ROSS GREENBERG

With the "push" playing field changing practically daily, here's an update on four more products to consider, including the recently released PointCast 2.0. Other push technology reviews appear in *Computerworld's* May 26, 1997 and June 23, 1997 issues. In this occasional series, I have reviewed Marimba, Inc.'s Castanet; BackWeb Technologies, Inc.'s BackWeb; Wayfarer Communications, Inc.'s Incisa; and Lanacom, Inc.'s Headliner Professional. This week's products show progress but are still flawed.

■ PointCast, Inc.'s PointCast Network Version 2.0 is faster and less greedy with bandwidth than previous releases. The Connections software makes it more useful for corporate purposes because you can set up your own intranet or Internet channel. But it still relies on scheduled polling to update desktop information.

■ DataChannel Corp.'s ChannelManager puts the information systems department back in control, pushing selected channels out to end users and customers. It takes some getting used to, though — it isn't just standard push.

■ InCommon, Inc.'s Downtown will let users define their own channels pretty easily, and its look-ahead caching makes page access very swift. But the interface needs some usability tuning.

■ FirstFloor Software, Inc.'s Smart Delivery provides for great document delivery and unique creation of your own channel (or push client). But using it for more traditional push purposes proved difficult because it was designed more for document delivery.

PointCast Network 2.0 (beta)

PointCast, Inc.

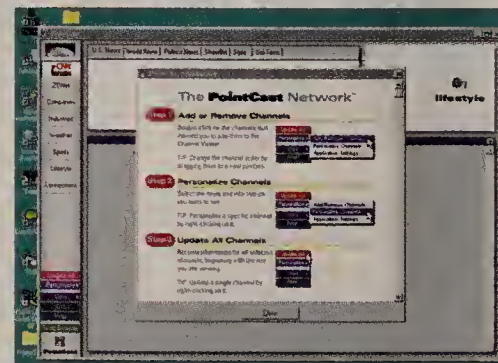
Sunnyvale, Calif.

www.pointcast.com

Price for client and PointCast Studio: Free

PointCast listened to its users. Being that there are about two million of them — one out of every 100 adults in the U.S. — that's a lot of listening.

With PointCast Network 2.0's release, expect fewer detractors. Version 2.0 is faster, less greedy with Internet or LAN bandwidth, and it multitasks better. Its viewer can be based on Microsoft Corp.'s Internet Explorer or Netscape Communi-



cations Corp.'s Navigator instead of proprietary. And it's easy to publish your own channel on the World Wide Web, and the client or viewer can be branded with a corporate logo. You can easily personalize the animated ad in the viewer and the screen saver. Just use PointCast's Studio design shop, which offers easy-to-create splash screen animations.



Launch ads focus on IBM Financial & Accounting Solutions and Web Publishing Internet Solutions.

The ads in the campaign feature the IBM Business Partner emblem followed by the line, "One of the many solutions available from IBM Business Partners."

The solution is here.

Looking for help? IBM Business Partners are independent experts who can help you find the right mix of technology, support, price and financing. And with tens of thousands worldwide, odds are there's one near you. To find one who specializes in your business, call 1 800 XXX-XXXX.

So what exactly are IBM Business Partners and what can they do for small businesses? These ads tell the story. They also include a handy toll-free number readers can use to find their nearest IBM Business Partner.

the "how can I get my foot in the door of small business?" solution

Exactly what do we mean by commitment?

Let's put it this way: we've designed our new \$35 million small business advertising campaign around you. Look above and see for yourself (note the nifty IBM Business Partner™ emblem). It means IBM Business Partners are the ones who are delivering

the hardware, software and the know-how to help small business. Not IBM. And to take this commitment up a notch, we've created an additional campaign that further demonstrates your expertise. Best of all, we're sending the sales leads straight to you. So be on the lookout. For more information, go to www.ibm.com/partners



Solutions for a small planet™



Call: Gates/Arrow 1 800 332-2222 • Inacom 1 800 664-9126 • Ingram Micro

1 800 456-8000 • JBA 1 800 jba-intl • Merisel 1 800 637-4735 • MicroAge 1 800

BESTeam® Software-Premier 887-0045 • TechData 1 800 237-8931 • Western Micro Technology 1 800 338-1600

IBM, DB2, MQSeries, Business Partner, BESTeam and Solutions for a small planet are trademarks of International Business Machines Corporation in the United States and/or other countries. Lotus and Domino are trademarks of Lotus Development Corporation in the United States and/or other countries. Other company, product and service names may be trademarks or service marks of others. ©1997 IBM Corp. All rights reserved.



If you haven't made a billion on browsers yet, here's plan B.

It's no longer about how you get on the Web, but what you do once you're there. And more companies are there to do business.

To get in on this emerging \$75 billion market, join Internet Specialty, our education and marketing support program. You'll learn

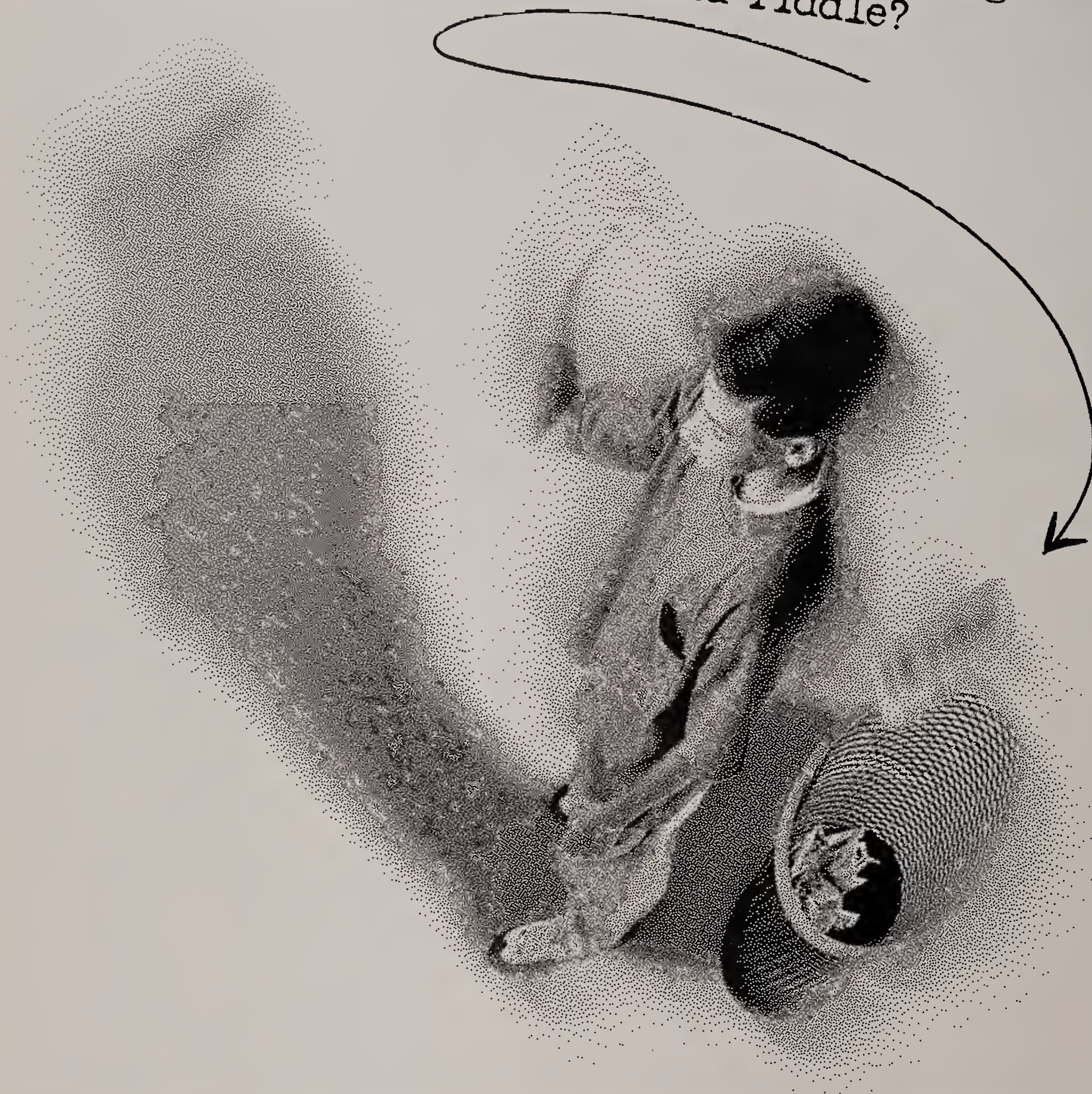


how to profit from your own solutions using Net.Commerce, Lotus Domino™ and IBM Firewall — all of which connect to your customers' legacy systems, courtesy of DB2® and MQSeries®. So stop browsing and start profiting. Interested? Stop by www.software.ibm.com/inetspec or call 1 800 IBM-1822, option 2.



Solutions for a small planet™

Despite an early lead
in technology, will
America end up playing
second fiddle?



America's IT industry. The best in the world. But we're throwing away our leadership. Because our knowledge and skills aren't being passed on to enough of our young people. Tech Corps gives your corporation a vehicle to change that. By supporting a grassroots



effort to enhance teaching and learning through technology. And give students the skills they need to keep our country number one. Discover the rewards of becoming a Tech Corps Corporate Sponsor. 508/620-7751 • <http://www.ustc.org>
America needs to know.

Organizations already providing national sponsorship include:
Cellular Telecommunications Industry Association Foundation (CTIA), Digital Equipment Corporation, and MCI Foundation.

But some things don't change: The "SmartScreen" screen saver is still anemic, and the ticker display can't be positioned arbitrarily. More important, PointCast still isn't a "true push" product, relying on scheduled polling to update desktop information. That can be an enormous drain on corporate bandwidth, even with PointCast's great enhancements in caching technology. Countering this is the I-server, which allows bandwidth congestion to be on local intranets rather than through gateways. Scheduled polling, limited to every five minutes or so, makes real-time updating impossible.

The I-server Administrator update, due by summer's end, permits IS administrators to limit the channels users can subscribe to and block some ad displays.

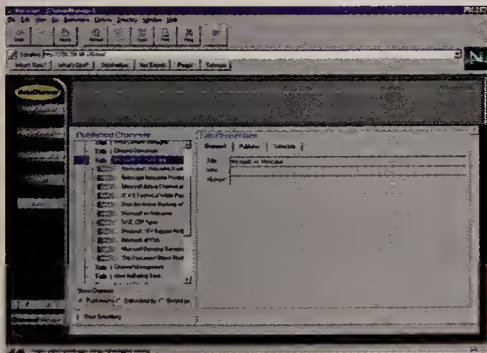
But the most dramatic part of 2.0's update is its Connections software, which allows anyone to become a PointCast publisher. Stick a wizard-generated .CDF file on your server, and you're a publisher. Publicize your new channel in a variety of ways, including on www.excite.com/, [pointcast](http://pointcast.com/), and timely access to millions is but a single mouse click away.

The update is impressive in its scope, and the price is right: free.

ChannelManager
DataChannel Corp.
Bellevue, Wash.
www.datachannel.com

Price for ChannelManager: 100-seat license, \$79 per seat; 1,000-seat license, \$20 per seat

In your department, there's one person everybody goes to when they need a good Web site. She knows all the search engines and all the odd-ball places hidden on the Web pertaining to your quest. Her bookmark file is bigger than the Manhattan yellow pages, and she has it all memorized. When she takes a day off, productivity grinds to a halt.



DataChannel has put those talents into ChannelManager. A ChannelManager administrator enrolls members in the system and in groups, such as Technical or Finance. Related and appropriate Web sites are grouped into channels, sub-grouped into tabs and itemized within the tabs. Each channel and its constituent parts are scheduled for monitoring and published (or made available) to interested groups whose members can either subscribe as they wish or be automatically subscribed. New channels, tabs and items are pushed to interested subscribers using Tibco, Inc. multicasting technology.

There isn't a proprietary client to download. Using any Java-enabled browser, the ChannelManager applet is automatically downloaded from the local server once for each machine.

Legacy machine users be warned: The hefty Java applet requires at least a 100-MHz Pentium processor and at least 16M bytes of RAM.

ChannelManager permits different people and different groups to have selected information prepared and presented to them by a cen-

tralized staff. The right information at the right time to the right people. Now your human channel manager can take a day off.

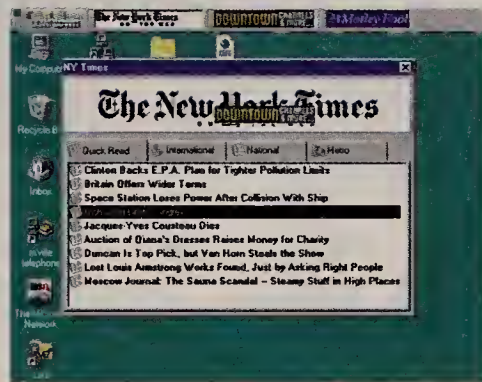
Downtown
InCommon, Inc.
San Mateo, Calif.
www.incommon.com

Price for Downtown server: \$10,000 (client is free)

Downtown has two parts: The client software provides vertical or horizontal taskbar-like item displays containing potentially animated icons for each channel subscribed to; the server software lets corporate users provide active content for their own channels, including a pop-up table of changed content. It's very easy to add additional channels.

Although Downtown will be Tibco-enabled in the next release, providing for true push, the version reviewed was a standard scheduled polled product with each client checking through the Hypertext Transfer Protocol (HTTP) for content changes across the Web or to the server.

Changes are announced via an alert on the channel bar, and a click on an icon brings up a browser Web page or a "premium channel" publisher's active pop-up splash screen. All pop-ups are based on parsing of standard Hypertext Markup Language from Web pages. Access to



the Web is through an unobtrusive local proxy web server that Downtown automatically installs. This allows smart look-ahead or prefetch of candidates for very fast future browsing from the adjustable Quickcache, even if offline.

Accessing password-enabled sites is simple with Downtown's easy-to-configure Authentication Library, a scheme in which log-ins are automatically made while the client or server does content change checks.

Downtown uses bandwidth only when the Internet connection is quiescent. And it boosts user-initiated requests, such as browser clicks, to the top of the download queue of the proxy server. That gives surprisingly little performance degradation.

Downtown is a surprisingly deceptive product — there's a lot more good design under its hood than is apparent with a glance.

Smart Delivery
FirstFloor Software, Inc.
Mountain View, Calif.
www.firstfloor.com

Prices: Smart Delivery Client, \$150; Smart Delivery Server, \$9,995; Software development kit, \$25,000

Getting the right mix between corporate intranet needs and end-user satisfaction is difficult in the push market. Some things, such as updated price lists, are a no-brainer: Every time a price list changes, everyone concerned should imme-

Push
technology
put to the
test

diately get an updated copy. But the low inventory report may be of importance only to the vice president of manufacturing.

FirstFloor's product allows document delivery (in which Web pages are merely a special case) through a centralized administrator, with enough room left over for end-user personalization. It consists of three pieces: the Publisher, Server and Subscriber.



The IS administrator creates a bookmark containing an agent he defines to indicate whether a uniform resource locator's data, its indirect HTTP links or both should be monitored — and if so, how often. He maintains the collection of those bookmarks in a catalog and publishes them on the server.

The server also prefetches and caches Web-based information, notifying and delivering those documents according to rule sets that define end users and the group to which they are allowed to belong. Defining composite groups isn't difficult.

All published information on the server is automatically scanned to produce keyword lists, summaries and indexes. Chances are that if it was important enough to publish, it's important enough to have indexed and searchable.

Finally, the separately available FirstFloor Application Developer's Kit allows your developers to entirely modify the behavior of the FirstFloor client, making the client entirely data driven. Your programmers can cause things such as bulletin alerts (either visibly or audibly cued) when, for example, a competitor drops or raises its prices.

FirstFloor is another push vendor heading to true push through the Tibco engine. That should make its Smart Delivery product work even more intelligently. To make the most use out of it will take some time, some training and some of your own intelligence. □

Greenberg is a reviewer and developer in New Kingston, N.Y. He can be reached at greenber@ramnet.com.

COMPUTERWORLD

For previous reviews on browsers and push technology products, go to our Web site at www.computerworld.com/guide/index.html.

Reviews include the following products:

- Communicator beta
- Microsoft Internet Explorer 4.0 beta
- Castanet, BackWeb
- Wayfarer's Incisa, Lanacom's Headliner

ake Roo

Disk space a problem? Too many disk drives? Here's the solution. Make Room. 120MB of room. Introducing SuperDisk™ and the LS-120 drive. Unlike the Zip™ drive, the LS-120 drive is compatible with standard 3.5" disks. So you only need one drive. And SuperDisk™ is perfect for huge multi-media files, back-up, and anything else you need to make room for. In other words, don't buy a PC without it. To learn more about the SuperDisk™ diskette and other LS-120 solutions for notebook, desktop, and add-on drives, call 1-800-888-1889, ext. 4050 or visit www.imation.com.

SuperDisk, Circle-pyramid logo, Imation and the Imation logo are trademarks of Imation Corp. Zip is a trademark of Imation Corp. © Imation 1997



In Depth

Author Michael Schrenk

A respectable IS consultant ventures into the desert for some DEF CON depravity. Toto, I don't think we're in Minneapolis anymore

FEAR & HACKING

in Las Vegas

By Michael Schrenk

How do you distinguish DEF CON from Comdex or Share or any other information technology gathering? DEF CON is the one to which attendees are merrily encouraged to bring firearms.

About a dozen did just that. One day they went deep into the desert to shoot large-caliber rounds at full cans of Mountain Dew and a paper likeness of Bill Gates. Nobody thought to bring clay pigeons, so for skeet shooting, they made do with America Online CDs.

I'm an Internet consultant from Minneapolis. I like to think I'm an upstanding member of the mainstream information systems community. So I was nervous about attending DEF CON V, held last month at the Aladdin Hotel and Casino in Las Vegas [CW, July 21].

But I was also drawn by the opportunity to learn network security techniques from the very hackers who break in to computer systems. DEF CON's organizer, known as Dark Tangent, touted the

fifth annual event as (among other things) the conference for computer hackers, password crackers, virus coders and phone phreaks.



I was uncomfortable because computer hacking and wire fraud aren't generally discussed by us polite corporate IS types, and we normally don't come in contact with those who participate in

such activities. At least, that's what I thought before the conference. Now I'm convinced we have contact with hackers all the time. We just don't notice them — and that's the way they like it.

But there are times when
Fear & hacking, page 77

Imbibing and merchandising were popular among attendees, most of whom requested anonymity



Picture Nostradamus with a pocket protector.

Dell Computer's
Dell



Microsoft's
Gates



Netscape's
Barksdale



PeopleSoft's
Duffield



Sun Microsystems'
McNealy




Sybase's
Kertzman



Gartner Group invites you to Symposium/ITxpo 97. You'll get a fascinating vision of IT possibilities from the industry's finest minds. Rub elbows with our panel of IT giants and more than 200 Gartner Group analysts. You don't need a mystic to tell you not to miss this one.

October 6-10, 1997 www.gartner.com **1-800-778-1997 1-203-316-6757**
Lake Buena Vista, Florida

 **GartnerGroup**
SYMPOSIUM/ITxpo97

The future of IT.

ENHANCED TECHNOLOGIES

☒ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____
Title _____ Company _____ E-mail address _____
Address _____ City _____ State _____ Zip _____
Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price: \$3.00/issue *U.S. Only, Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

- 1. BUSINESS/INDUSTRY** (Circle one)
- 10. Manufacturer (other than computer)
 - 20. Finance/Insurance/Real Estate
 - 30. Medical/Law/Education
 - 40. Wholesale/Retail/Trade
 - 50. Business Service (except DP)
 - 60. Government - State/Federal/Local
 - 65. Communications Systems/Public Utilities/Transportation
 - 70. Mining/Construction/Petroleum/Refining/Agriculture
 - 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
 - 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

90. Computer/Peripheral Dealer/Dist./Retailer
95. Other _____ (Please Specify)
- 2. TITLE/FUNCTION** (Circle one)
- IS/MIS/DP MANAGEMENT**
- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
 - 21. Dir./Mgr. MIS Services, Information Center
 - 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
 - 23. Dir./Mgr. Sys. Development, System Architecture
 - 31. Programming Management, Software Developers

- 41. Engineering, Scientific, R&D, Tech. Management
 - 60. Sys. Integrators/VARs/Consulting Management
- CORPORATE MANAGEMENT**
- 11. President, Owner/Partner, General Mgr.
 - 12. Vice President, Asst. Vice President
 - 13. Treasurer, Controller, Financial Officer
- DEPARTMENTAL MANAGEMENT**
- 51. Sales & Mktg. Management
 - 70. Medical, Legal, Accounting Mgt.
- OTHER PROFESSIONAL MANAGEMENT**
- 80. Information Centers/Libraries, Educators, Journalists, Students
 - 90. Other Titled Personnel

- 3.** Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
- Operating Systems
- (a) Solaris (e) Mac OS
 - (b) Netware (f) Windows NT
 - (c) OS/2 (g) Windows
 - (d) Unix (h) NeXTstep
- App. Development Products ☐ Yes ☐ No
- Networking Products ☐ Yes ☐ No
- Intranet Products ☐ Yes ☐ No
- 4.** Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
- (a) ☐ Internet software
 - (b) ☐ Internet browsers
 - (c) ☐ Web authoring/development tools

COMPUTERWORLD

B4H7 V

BUSINESS ECONOMICS

☒ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____
Title _____ Company _____ E-mail address _____
Address _____ City _____ State _____ Zip _____
Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price: \$3.00/issue *U.S. Only, Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

- 1. BUSINESS/INDUSTRY** (Circle one)
- 10. Manufacturer (other than computer)
 - 20. Finance/Insurance/Real Estate
 - 30. Medical/Law/Education
 - 40. Wholesale/Retail/Trade
 - 50. Business Service (except DP)
 - 60. Government - State/Federal/Local
 - 65. Communications Systems/Public Utilities/Transportation
 - 70. Mining/Construction/Petroleum/Refining/Agriculture
 - 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
 - 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

90. Computer/Peripheral Dealer/Dist./Retailer
95. Other _____ (Please Specify)
- 2. TITLE/FUNCTION** (Circle one)
- IS/MIS/DP MANAGEMENT**
- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
 - 21. Dir./Mgr. MIS Services, Information Center
 - 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
 - 23. Dir./Mgr. Sys. Development, System Architecture
 - 31. Programming Management, Software Developers

- 41. Engineering, Scientific, R&D, Tech. Management
 - 60. Sys. Integrators/VARs/Consulting Management
- CORPORATE MANAGEMENT**
- 11. President, Owner/Partner, General Mgr.
 - 12. Vice President, Asst. Vice President
 - 13. Treasurer, Controller, Financial Officer
- DEPARTMENTAL MANAGEMENT**
- 51. Sales & Mktg. Management
 - 70. Medical, Legal, Accounting Mgt.
- OTHER PROFESSIONAL MANAGEMENT**
- 80. Information Centers/Libraries, Educators, Journalists, Students
 - 90. Other Titled Personnel

- 3.** Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
- Operating Systems
- (a) Solaris (e) Mac OS
 - (b) Netware (f) Windows NT
 - (c) OS/2 (g) Windows
 - (d) Unix (h) NeXTstep
- App. Development Products ☐ Yes ☐ No
- Networking Products ☐ Yes ☐ No
- Intranet Products ☐ Yes ☐ No
- 4.** Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
- (a) ☐ Internet software
 - (b) ☐ Internet browsers
 - (c) ☐ Web authoring/development tools

COMPUTERWORLD

B4H7 V



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



Fear & Hacking

CONTINUED FROM PAGE 75

hackers go out of their way to get noticed. One day during DEF CON, a group traveled three hours north of Las Vegas to a government facility known as Area 51. This is the place — very much in the news lately — where it's long been rumored that the government is conducting research with technology recovered from a crashed alien spacecraft.

When the hackers reached the security fence surrounding the compound, they lofted aluminum foil attached to helium balloons and watched the devices float within the scan of Area 51's radar. Minutes later they were asked to kindly leave the premises.

And the duck sang 'Blue Suede Shoes'

You expect vendors at any computer conference. At DEF CON V, entrepreneurs peddled logo parody T-shirts, books on hacker culture and piles of used telephone and computer hardware.

Even here, though, there was a hack. I felt sorry for the T-shirt salesman who lost much of his inventory when the sign that originally said "\$20 each" was replaced by one that read "Free, take one."

And there was a vendor-sponsored scavenger hunt. Items on the list included the following:

- A security camera (60 points)
- A foreign Web page "redecorated" by the hunter (15 points)
- A live duck (20 points)

The hacker with the most points got to grab items from a box filled with used computer and telephone components.

And yes, somebody found a duck.

Did you say root beer jugs?

One guy showed up with a handmade rail gun. A rail gun moves a lot of electrical energy down a conductive track. Along the way, it can fire a projectile at speeds approaching 10,000 meters per second. It discharges so much power, the designer used graphite disks as projectiles. Anything metal, you see, would have been welded to the gun.

The graphite projectiles were expensive, but the gun was otherwise built from hardware store items and scrap. The major design problem — the need for a large amount of power — was

solved with banks of "Tesla-style" high-voltage capacitors made from root beer jugs, salt water, bolts, wire and tin foil.

"I'm doing this to prove that you don't have to be trained in something to do something. Most of the people in this room know that, but the public at large doesn't," the designer said.



That simple truth justified my attendance at DEF CON. I won't be able to convince myself any longer that I lack the training to make a system secure. There should be ways to a secure system, even if the path requires an untraditional route.

Holy Cow, a Las Vegas microbrewery, originally agreed to give a free beer to anybody with a DEF CON badge. The offer was published on DEF CON's Web page (www.defcon.org), and coupons were printed.

But shortly before the convention, Holy Cow changed management. The new boss refused to honor the free beer commitment.



The Aladdin Resort and Casino has seen better days. For some reason, all the top-notch hotels put out "No Vacancy" signs when they discovered what DEF CON was all about.

When the bad news was announced, conference attendees jeered. But the mood changed to anticipation, then wild laughter as the announcer said, "So I visited their Web page ..." At this point the crowd started chanting, "What's their URL? What's their URL?"

The lack of free beer didn't stem the flow of alcohol. Drinking games thrived.

In one — "the TCP/IP game" — the

Jeopardy. Categories included We Suck Hate Cyber Movies. Some (Inter)net Security and Aliens Among Us.

And then there was the "Spot the Fed" contest. It's a fact of DEF CON life that federal law enforcement agents attend the conference. Squares like me, the feds hope to learn the latest

tricks of the trade. But unlike me, they keep a close eye on who's who at DEF CON — groups, trends and leaders are all monitored.

I was amazed as three consecutive federal agents were spotted and marched sheepishly (but good-naturedly) to the podium. In each case, the agent was correctly identified solely through the social engineering skills of a hacker. Winners received T-shirts and a round of applause.

I can't recall ever seeing an

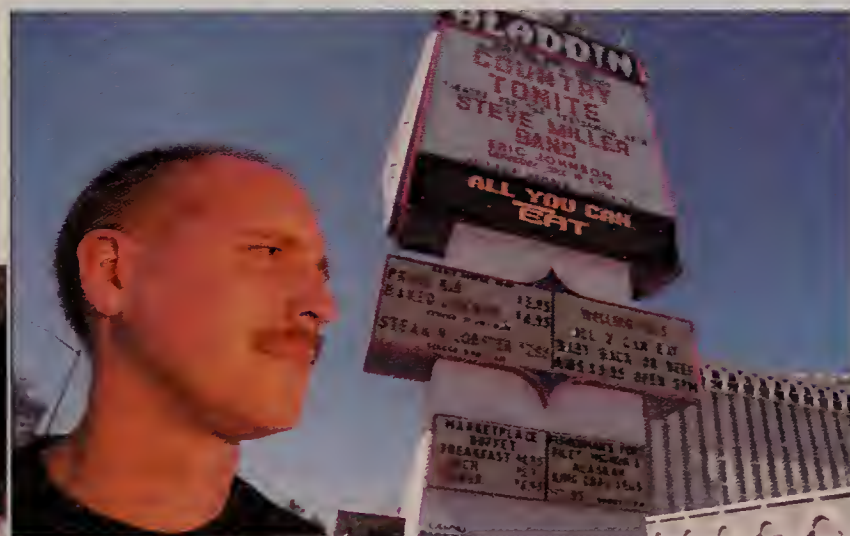


industry show with as much audience participation as DEF CON. A simple question such as, "How many of you hackers program with the keyboard in your lap?" filled the conference room with cheers and whistles. Pleased by the results of his informal demographic study, Doug Hacker (yes, that's his real name) proceeded to toss handfuls of his invention, the Lap Clip, to the audience.

Throwing was the method of choice for distributing prizes — and there were countless prizes. People would stand on their chairs and dive for copies of books, such as *E-mail Addresses of the Rich and Famous* or obsolete computer boards. It wasn't uncommon to see CD-ROMs or unprogrammed cellular phones bounce 50 or 100 feet into the audience.

The main door prize was — what else? — a door. It came from a GTE Corp. service truck. It was not thrown into the audience. □

Schrenk (pictured at immediate left) is a Minneapolis-based Web application consultant at Analysts International Corp. He can be reached at schrenk@aol.com.



goal was to determine how much beer a panel of experts could consume before they became incapable of answering questions on topics such as firewall filtering or bit-level Internet protocols.

Another favorite game was Hacker

IT Careers

Hacker ATTACKERS

**Want the REALLY best IS pros
to safeguard your systems?
Hire the guys who break in to them.
Then again, maybe not.**

By William Spain

IF IT TAKES A THIEF to catch a thief, then it follows that the best way to secure a system is to enlist people who have proved expert at breaking in to it. Because no one knows better than hackers where the weaknesses lie, it should make sense to hire a few of them — assuming they have mended their ways — to help keep the rest honest.

Then again, maybe not. If an individual has shown a predilection for crime, can he ever be trusted again?

Russ Hailey, president of Lawrence, Kan.-based Secure Network Systems, is appalled by the very idea. "I would not hire an ex-thief to protect a warehouse, and I won't employ any ex-hackers, period," he says. "Our pledge to our customers is that anyone who is caught hacking will quickly be an ex-employee."

Hailey's reasoning: "We have taken the position that our future rests in the trust our clients place in us. Whenever we do an installation, they have to uncover their barest network secrets."

Also, Hailey says that although "it is really not that difficult to protect a network, it takes a lot of discipline to do it. Hackers don't tend to be very disciplined people. That's why they hack."

But Hailey adds that to be effective, he and his staff "have to have a lot of insight into hacker culture. We try to do that by reading their news-groups and staying up to

speed on what they are bragging about. We also hack on our own system."

His views are shared by many in the information systems security community — at least on the record. Although some will admit to hiring, or at least consulting with, ex-hackers, many had no comment at all on the question. Among them are the National Computer Crime Information Center, part of the Federal Bureau of Investigation, and the operator of the system that is hacking's Holy Grail: the National Security Agency (NSA).

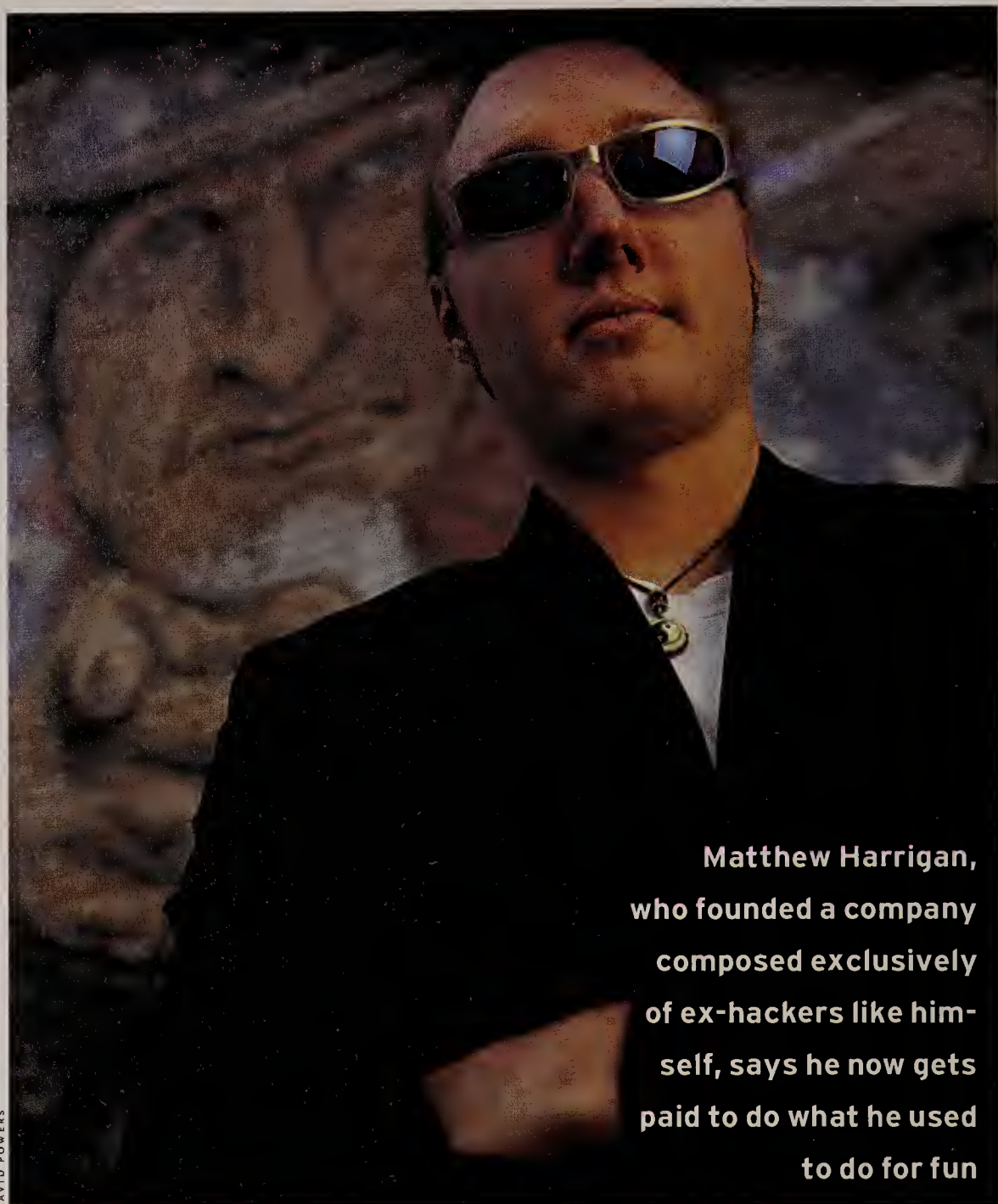
A spokeswoman for the FBI declined repeated requests for an interview, and the NSA didn't respond to faxes and telephone calls. But a highly regarded IS security consultant confirmed that both institutions, along with several major defense contractors, have occasionally used hackers — at least as informants — in the past.

Barring that knock on the door, how does an ex-hacker get hired to do security work? One way, of course, would be to deny any past involvement. Assuming one has never been caught, that might work, unless an employer smelled a rat.

For example, without a formal security resume that a potential

"You have to find the vulnerabilities before you can patch them. It is definitely a mind-set, a very persistent type of attitude geared toward the ultimate penetration of the target entity."

— Matthew Harrigan, ex-hacker



**Matthew Harrigan,
who founded a company
composed exclusively
of ex-hackers like him-
self, says he now gets
paid to do what he used
to do for fun**

employer can check up on, how does someone explain how they came by the necessary skills?

Matthew Harrigan discovered one answer: He founded his own company composed exclusively of ex-hackers. He now gets paid to do what he used to do for fun.

Harrigan says he was "sitting around one day hacking this unnamed company" when he realized that he might well be able to make a living showing it and others how he got in and how to plug the hole. The result was San Francisco-based Micro-Cosm, which specializes in penetration-testing, policy review and secure World Wide Web application development.

Ex-hackers, Harrigan explains, often have the best "in-depth understanding of security issues. You have to find the vulnerabilities before you can patch them. It is definitely a mind-set, a very persistent type of attitude geared toward the ultimate penetration of the target entity. I am looking for people with understanding of end-to-end en-

Breaking in to the field

Managers often balk at the idea of hiring master hackers, but they still want candidates with the skills of master hackers.

Although IS security companies may disagree about the wisdom of hiring former hackers to protect their systems, they all look for people who have the skills of a master.

Some of the technology involved can be learned easily enough. But security departments want people who can do more than just bang out code. Creativity in puzzle-solving and solid logic and analytical skills are as crucial to successful protection as they are to penetration.

And because there are so many potential ways to crack a system, security personnel often need to be generalists. Desired skills include a broad range of knowledge about network design, routing protocols, Unix, encryption and electronic commerce, and a cross-section of operating system experience. A solid Internet service provider background also is a plus.

—William Spain

ryption, buffer overflows, electronic commerce and networking protocols."

That said, Harrigan doesn't employ "anyone currently involved in hacking, and it would be very hard for me to hire someone with a criminal record. That shows some measure of recklessness or carelessness. Committing a criminal act is one thing, but I won't hire people who do it for malicious reasons. I have very strong feelings about people who destroy data needlessly."

There are two kinds of hackers, according to Harrigan: "There's the people who want to break in to the FBI because it's cool, and then there's the real, true hacker: a person who is intrigued by what they are doing — by the challenge — and that is why they do it."

Harrigan says he prefers to hire from the second group. "When we



hire someone, we assess very carefully their attitude toward the clients. They have to understand that they are making a big change [and

can't have] a 'nyah-nyah-nyah' attitude."

In compensation for putting away such childish things, however, Harrigan can promise a high degree of job satisfaction: "We have a 99.9% success rate in penetrating clients," he says.

Another ex-hacker, now employed to do security work at a Midwestern company, says he still is having a great time after going legit.

"It allows me to do everything I did as a kid, but legally, and they even pay me very well for it," he says.

Ironically, that former hacker's "first major contract was from someone I had broken in to a few years ago, and they knew I had done it. It made for a very amusing initial conversation." □

Spain is a freelance writer in Chicago.

Tools for the trade

Online resources for people who want to get into IS security work:

National Computer Security Organization
www.ncsa.com

InfoWar
www.infowar.com

Computer Security Resource Clearinghouse
csrc.nist.gov

Computer Emergency Response Team
www.cert.org

Hacked Net
www.hacked.net

EXECUTIVE TRACK

James H. Slusser was named vice president and chief information officer at TAD Resources International, Inc., a leading staffing services firm. Slusser has more than 30 years of information systems experience. He previously held technical and management positions at Emcon Ltd., Ford Motor Co., Digital Equipment Corp., Ernst & Whitney LLP, Shirley Co. and Serono Laboratories.

David N. Rasmussen was named CIO at CFX Corp. in Keene, N.H. Rasmussen was second vice president and strategic systems officer at ReliaStar Financial Corp. in Minneapolis. He also worked 18 years at Digital in New Hampshire.

David Spooner was appointed CIO at Millbrook Distribution Services in Leicester, Mass. He previously was director of corporate IS at Staples, Inc. in Framingham, Mass. He also has held IS management positions at Andersen Consulting

and Marshalls, Inc.

Alex J. Gibbons, 50, was named to the newly created position of vice president and CIO at The Pillsbury Co. in Minneapolis. Gibbons recently advised GE Capital Corp. in a health care/IS development venture.

H. Scott Barrett, 36, was named to the newly created position of senior vice president for information technology at Republic Industries, Inc., a Fort Lauderdale, Fla., conglomerate of automotive retailing, solid waste and security services. Barrett previously was president of domestic retail at Viacom, Inc.'s Blockbuster Entertainment unit.

Dennis Dirks, CIO at The Depository Trust Co. in New York, was promoted to chief operating officer at the company. **Donald F. Donahue** replaced Dirks as CIO. Donahue was executive vice president of operations at the company.

David Moon was named to the newly created position of CIO at Doubletree Hotels Corp. in Phoenix.

John V. Scicutella, 48, previously executive vice president of operations and systems at Prudential Insurance Company of America in Newark, N.J., was named CEO of Prudential Individual Insurance Group. Scicutella joined Prudential in 1995. Before joining Prudential, he was an executive vice president at The Chase Manhattan Bank Corp., where he was also responsible for operations and systems.

Edwina Woodbury, 46, was named executive vice president, chief financial officer and administrative officer at Avon Products, Inc. in New York. Woodbury was promoted from senior vice president. She will be responsible for the cosmetics maker's global IT services. She replaces Edward J. Robinson, Avon's chief operating officer,

who resigned in May.

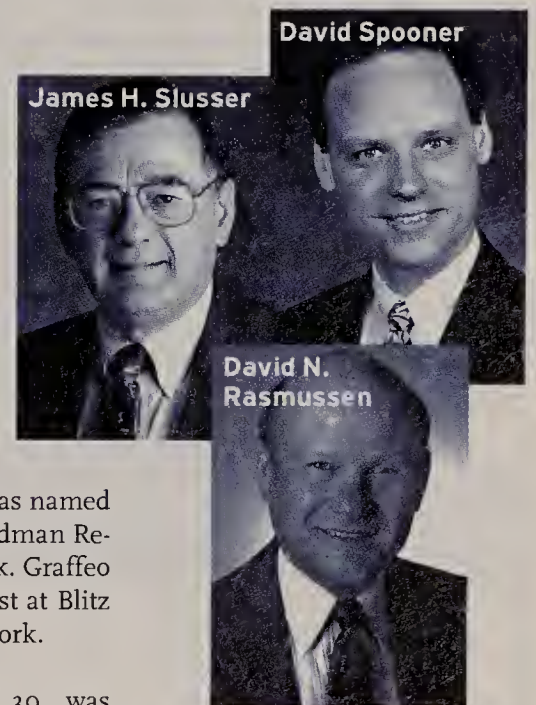
Patrick L. Brown, 40, was named IS manager at WNBC in New York. Brown was manager of technology support at A&E Television Network.

James Graffeo, 31, was named director of MIS at Friedman Realty Group in New York. Graffeo was a systems specialist at Blitz Systems, Inc. in New York.

Gregory C. Smith, 39, was named managing director at AdMedia Partners, Inc., a New York-based investment bank. Smith was managing director and head of the IS group at Dean Witter Reynolds, Inc. in New York.

Thomas W. Lemke, 48, was named to the newly created position of vice president for database marketing at Kmart Corp. in Troy, Mich. Lemke will report directly to Floyd Hall, Kmart's chairman and CEO.

Mark A. Goldstein, 51, was named senior vice president and CIO at Proffitt's, Inc., a Jackson, Miss.-based department store chain. Goldman previously was director of enterprise solutions at IBM's distri-



bution industry practice.

MicroAge, Inc. in Tempe, Ariz., a global technology services provider, appointed **Robert W. Mason** as president of the MicroAge Services Group and CIO. Mason is a 30-year IS veteran with experience at Anheuser-Busch, Inc. Johnson & Johnson and Bendix Aerospace, Inc.

COMPUTERWORLD

Tempted to put your IS skills to work in recruiting? Read how at our online IT Careers site: www.computerworld.com/careers

REGIONAL SCOPE

Chicago

WINDS
of Change

Hiring is getting desperate in the Windy City, where IS managers are offering large salaries — and large referral bonuses — for any available talent **By Steve Alexander**

CHICAGO-AREA information systems managers are finding it more difficult to hire new employees than at any time in nearly three decades.

As a result, IS shops are taking longer to fill jobs and are more likely to use contractors to provide essential skills. IS managers rely more heavily on headhunters, job fairs and internal referrals. They are finding that if a good candidate turns up, it's best to put an offer on the table quickly.

Here's what three Chicago-area IS managers are experiencing:

Grab 'em quick!

Keith Grossich, chief information officer, Blue Cross/Blue Shield Association of Illinois (an umbrella group that represents 59 independent insurance firms)

Grossich says hiring hasn't been this tight in the 25 years he's been in IS. He's trying to fill five openings within an IS staff of 60. The staff uses IBM mainframes and Unix client/server systems.

"We're participating in job fairs, posting jobs on the Internet, using newspaper ads, using some search firms. And we've also, in the interim, hired half a dozen consultants," Grossich says.

One of the open jobs, a director of information technology planning position, has been open since January. And it will be difficult to fill, Grossich says. Most of the other jobs are for LAN/WAN senior analysts and network engineers with five to seven years of experience to work on groupware, Internet and

intranet applications on a Windows NT server. But Internet and intranet skills are the most difficult to find, Grossich says. "A lot of people who are doing that are in consulting and really are not for hire," he says.

Grossich has learned that you have to move quickly to hire people. "If you get a resume in, you've got to be prepared within a day or two days maximum to get back to that person, get him or her in for an interview and decide whether to make an offer. If you don't, three or four other organizations will beat you to a good person," he says.

Relying on contractors

Don Karmazin, senior vice president of IS, Chicago Board of Trade

Karmazin says he hasn't seen the job market this tight in nearly 30 years.

"We're out beating the bushes, attending technical job fairs and using any resources we can to provide employees with hiring referral incentives," Karmazin says.

The Board of Trade has 150 IS employees and uses a Tandem Computers, Inc. system running a proprietary operating system, and Sun Microsystems, Inc. workstations running Unix. The firm has approximately 15 IS openings. It seeks computer systems engineers and designers, and senior programmer/analysts with two or more years of experience.

"We want people with skill in Tandem assembler language, Java and C++," Karmazin says.

"We're getting two or three hires a month, and we're continually running with a shortfall in staff," he says. "We



use consultants as necessary to bridge shortfalls.

"Tandem assembler language expertise is probably the most difficult skill to find, followed by Java and database administrators. Our best hiring source is technical job fairs — not just on campuses, but in the city," Karmazin says.

Doubling referral bonuses

John Hollahan, director of IT services, The Peoples Gas Light and Coke Co.

The job candidate shortage has forced The Peoples Gas Light and Coke, a utility serving the Chicago metropolitan area, to adopt new hiring strategies.

Rather than rely exclusively on newspaper advertisements and college recruiting, the utility has turned to headhunters. It also is using a system of employee-referral incentives to help fill a half-dozen empty programmer/analyst positions.

The utility has 198 IS employees. It is an IBM 3090 user that is adding Unix machines and replacing dumb terminals

with Windows NT workstation clients. Hollahan says the firm plans to replace its mainframe system with a three-tiered client/server system within two years.

The company has had to hire approximately 20 contractors to support its mainframe system while IS staffers work on the shift to client/server.

Under the employee-referral incentive plan, an employee receives \$500 for a new employee referral after the new hire has been at the company two weeks. The employee receives another \$1,000 after the new employee is there six months. Those amounts reflect a recent doubling of incentive payments. Peoples has hired approximately eight IS people through the referral-incentive program.

The utility seeks senior programmer/analysts with five to seven years of experience. Candidates should know IBM's MVS mainframe operating system, Unix and Powersoft's PowerBuilder. □

Alexander is a freelance writer in Edina, Minn.

Where do I look,
and what will it pay?

Additional material on IS job salaries, employers and job hunting resources in the Chicago area is available at our online IT Careers Web site.
www.computerworld.com/careers

Careers Are Meant To Be Enjoyed!

CHICAGO, IL OPPORTUNITIES



Kemper®

Please forward resume with salary history to:
Human Resources-CCK/CW

KEMPER

One Kemper Dr., D-8, Long Grove, IL 60049-0001
FAX: (847) 320-5624

Visit our web site at: www.Kemperinsurance.com

(AA/EOE)

Our career opportunities offer professional challenge.

Our 1,100 member I.S. team provides the best service for our worldwide insurance activities. This has resulted in our dynamic progression into the latest in Client Server and New Development technologies, with an outstanding number of opportunities in a variety of platforms including traditional systems.

Our beautiful campus and comprehensive benefits offer a well-balanced work/life environment.

We believe your hard work should be rewarded. We are in a rural-like community on a 600 acre campus with a full service fitness center, surrounded by a PGA championship golf course, Kemper Lake and more! Being only 35 miles NW of Chicago, you can enjoy the culture, entertainment and diversity of city life. You will also enjoy an excellent compensation package including extensive career development, outstanding training programs, profit sharing, retirement plan and an easily accessible location.

DEVELOPMENT SERVICES

Requires methodology or case experience with a background in DBA/OPERATIONS, applications development, PVCS/TRACKER, ENDEVOR, PANVALET, LIBRARIAN, testing, LOTUS NOTES, GUI and C/S testing, CLIENT SERVER systems and/or document management.

PROGRAMMER ANALYSTS: ■ COBOL ■ CLIENT SERVER

Entry Level and Experienced Positions Available

Requires a background in GUI, APL, MIDDLEWARE, C++, DB/2, SYBASE, ORACLE, INGRES, SQL SERVER, OBJECTSTAR, COBOL (maintenance/full cycle development), DB/2-JCL-OS/2-UNIX, TSO/ISPF, LOTUS NOTES, VISUAL BASIC, POWERBUILDER, DATAWAREHOUSE and/or WINDOWS 3.11/NT.

SYSTEMS ENGINEERING

Software support; UNIX environment, operating system, file structures and commands. Supports midrange database engines; UNIX-AIX and OS/2. MVS, HP, ATT and DBMS (DB2, ORACLE, INGRES and OBJECTSTAR) required. CICS and MQ SERIES support; design monitoring, performance tuning and optimization. ENCINA, TUXEDO, C, C++ and MIDDLEWARE background needed.

CUSTOMER SUPPORT

1st and 2nd level supervisory and technical support positions available. Experience with problem tracking/resolution and work flow/process design required. Knowledge of Expert Advisor desirable.

I.S. UNIT MANAGERS

Experience in information systems management as well as the ability to manage technical and organizational change required.

PC/LAN ADMINISTRATION SPECIALIST

Requires a background in OS/2 (NT LAN support/software), software/hardware installation, problem determination/resolution, TSO, EXPERT ADVISOR, LOTUS NOTES, SMARTSUITE, WINDOWS, WINDOWS NT, project coordination, NOVELL NETWORK 4.1 and/or DOS/WINDOWS WIN 95.

Work with The Biggest Name in the Business



Our name may confuse a few people, but our numbers won't. One of the Chicago area's top 100 businesses, Littelfuse, Inc. is a \$270 million publicly traded company (LFUS on Nasdaq) with a towering reputation for success. We use the most advanced technology to provide our customers with the substantial advantages of the industry's most innovative products. Rapid expansion has created a variety of opportunities for experienced IS professionals to support our state-of-the-art IBM AS/400 platform with a Novell network. If your capabilities include electronic commerce and global manufacturing support, join an industry giant as:

SENIOR PROGRAMMER ANALYSTS

- 7-10 years of experience, manufacturing preferred
- RPG, AS/SET, SQL
- BPCS, Infinium preferred
- EDI hands-on experience ideal
- Barcoding a plus

PC NETWORK ENGINEERS

- 3-5 years of experience
- Novell CNA/CNE preferred
- Internet/Intranet development
- Token Ring and Fast Ethernet
- Windows 3.1, 95 & NT
- MS Office Suite; Lotus Notes

Success is the big story at Littelfuse, Inc. We offer a competitive salary and an outstanding benefit package, including casual business attire, 401 (k) with company match and company-paid pension. For immediate consideration, forward resume to: LITTELFUSE, INC., 800 E. Northwest Highway, Des Plaines, IL 60016. Fax: 847-391-0434. E-mail: ccharles@littelfuse.com All resumes must indicate Dept. ISCW-CC on cover letter. Principals only—only qualified candidates will be contacted. For more information about Littelfuse, check our web page at www.littelfuse.com eoe m/f/d/v

INNOVA

CONSULTING PROFESSIONALS, INC.

INNOVA Consulting Professionals, Inc. is a premier computer software consulting firm. We have positions available for experienced professionals in the following areas:

■ SALES ACCOUNT EXECUTIVE

■ TECHNICAL RECRUITER

■ MAINFRAME

COBOL, IMS DB/DC, DB2, CICS, DB2/DBA, VSAM, PL1, SAS, AS400, Mod Comp, FORTRAN, ADABAS/NATURAL, FOCUS, Data Warehouse Programmer

■ CLIENT/SERVER

Oracle, Unix, C, C++, LAN Technician (Novell 4.1)

Please mail/fax your resume to: INNOVA Consulting Professionals, Inc., 53 W. Jackson, Suite 620, Chicago, IL 60604-3607. FAX: (312) 294-9951, PH: (800) 498-0377. E-mail: innova@nii.net

IBM BUSINESS PARTNER
BESTeam
Software - Premier
EOE

Looking for Technology Leaders

We are a leading consulting firm specializing in the energy and telecommunications sectors. We have immediate opportunities in the following positions:

Visual Basic Programmers

(\$50,000-\$125,000) - must also be proficient in SQL and Microsoft Access.

Network and Hardware Specialists

(\$50,000-\$100,000) - must be able to setup hardware (Intel and RISC) and software (NT, UNIX, Oracle, Sybase, MS SQL Server, Office 97, Outlook, ODBC).

Java/Internet Developer

(\$75,000-\$150,000) - must have proven track record in developing using both Java and ActiveX technology, including linking internet applications to enterprise databases.

Database Administrators and Data Warehouse Specialists

(\$100,000-\$175,000) - must have proven track record in all facets of data warehousing including database design, performance tuning, database scrubbing, etc.

Client/Server Project Managers

(\$125,000-\$250,000) - must have proven and verifiable experience in managing large scale (\$2,500,000+) projects preferably in the areas of financial and customer billing systems.



UTILITIES
International

Send resume in confidence to:

Director, Human Resources
Utilities International, Inc.
161 North Clark St. Suite 3400
Chicago, IL 60601

or fax to: 312-580-6212

Hewitt

I WANT TO
BE CREATIVE.

RESPECTED.

SUPPORTED.

CHALLENGED.

AND YEARS AHEAD
OF THE COMPETITION.

COME JOIN OUR TEAM. What are you looking for in a career? One thing to consider is the future you can build with an organization that values the people behind the technology. That's the future that could be awaiting you right now at Hewitt Associates LLC, a global management consulting firm specializing in human resource solutions. It's intense. Team-oriented. And incredibly rewarding. Come and get it. We're seeking:

- PROGRAMMER ANALYSTS
- BUSINESS SYSTEMS ANALYSTS
- INFORMIX DBA
- DB2 DBA
- WINDOWS NT ENGINEER
- SOFTWARE DEVELOPERS

The opportunity to pursue the career you've always wanted is waiting for you at Hewitt. Bring your skills and see why we're one of PCWeek's "Fast-Track 500." We offer competitive salaries and benefits, a business casual dress code, and a team-focused environment. For consideration, please forward a resume to: Hewitt Associates LLC, TBA Technical Recruitment, Building 30P, 100 Half Day Road, Lincolnshire, IL 60069. FAX: 847-883-0076. E-mail: axnawrot@hewitt.com. Reference #615. Equal Opportunity Employer. For more information, please visit our web site: www.hewitt.com

Information Technology The AMOCO WAY

Amoco Corporation, a dynamic leader in the oil and gas industry, has several challenging opportunities within its Information Technology department. We are looking for highly motivated individuals in the following disciplines:

Database Administrators:

Responsibilities include Database support, establishing and implementing backup and recovery strategies, in addition to data modeling and sourcing. This position requires 2 to 5 years Application Development experience using SQL, and client server application development along with a knowledge of DB2, or Oracle, UNIX and MVS knowledge a plus.

Client Server Application Developers:

Requires two to five years experience in either of the following:

- Powerbuilder with Oracle or Sybase
- Lotus Notes as a primary skill
- Visual Basics with relational database

All of these positions will work with customers and teammates to identify solutions to problems; document requirements; and build, test, deploy and maintain applications. Experience in developing, maintaining and integrating client server applications are needed. MS Access and other relational DB skills are a plus.

Mainframe Programmers:

Requires at least two years systems experience with the following: Cobol, SQL, REXX MVS (includes TSO, ISPF, SYNCSORT, VSAM, QMF), and/or FOCUS. Client server environment a plus.

Amoco offers a highly competitive salary/benefits package and exceptional opportunity for professional growth. For confidential consideration, qualified applicants should forward their scannable resume and salary history to:



Amoco Corporation
Attn: DW
MC 3408
200 East Randolph Drive
Chicago, IL 60601
Or Fax to (312) 856-5723

Visit our home page at www.amoco.com.

Equal Opportunity Employer. No Phone Calls or Agencies, Please.

CICS GROUP LEADER

May & Speh has an unparalleled record of 50 years of continuous growth and profitability. Providing technology resources for clients ranging from Fortune 500 to medium sized companies, we are proud of our innovative work force, our 24% compound annual growth rate of the last five years, our constantly enhanced technology, our state-of-the-art data center and our commitment to the development and training of our employees. This is an opportunity to join in our success as we spearhead the company's future growth.

Our CICS Group Leader will be responsible for the hands-on supervision of the online systems group insuring the integrity, security and performance of CICS and related systems software. Requires 5+ years of CICS (V.2 & V.3; V.4 is a plus), MVS/ESA, IPCS, MQ Series, TCP/IP sockets and some supervisory background. IMS, TMON & Playback is a plus.

We offer an excellent salary and benefit package. Please send/fax your resume to: **May & Speh, Dept. HR-CW8/397, 1501 Opus Place, Downers Grove, IL 60515-5713; Fax: (630) 719-0290; E-mail: recruiting@mayspeh.com.** An Equal Opportunity Employer



MAY & SPEH

Find
training
now.

PROGRAMMER & PROGRAMMER ANALYSTS

We are a \$10 Billion public pension fund conveniently located just off of I-294 in west suburban Oak Brook. We are seeking an entry level programmer and an experienced programmer/analyst. Immediate projects will include development of new functions and improvements to existing applications using suite of Software AG development tools (NATURAL, ADABAS, CONSTRUCT, PREDICT, CON-NECT, iExpress, and LIGHTSTORM). Future projects will include development of Graphical User Interface (GUI) and enabling existing applications for the World Wide Web (WWW). The successful candidates will be bright, energetic people who possess technical and interpersonal communication skills combined with the desire to work in a dynamic and diverse team environment. We offer flex-time, a 35 hour work week, continuing company-paid technical training, a competitive salary, a comprehensive benefits package, and an on-site health club facility.



**ILLINOIS MUNICIPAL
RETIREMENT FUND**
Human Resources
2211 York Rd., Suite 500
Oak Brook, IL 60523-2374
FAX# (630) 368-5397
EOE M/F/D/V



http://careers.computerworld.com

INFORMATION TECHNOLOGY

Are you an exceptional individual with the potential to make a major contribution within a dynamic worldwide organization? Do you have ambition, drive and unlimited intellectual curiosity? If so, SBC Warburg can offer you a career with virtually limitless opportunities.

SBC Warburg, a global investment bank with operations in more than 40 countries, has openings in our downtown Chicago office for IT professionals with skills in the following areas:

- | | |
|--------------------|--|
| • Windows NT | • Java |
| • WEB Development | • C/C++ |
| • NeXT Step | • Visual C++ |
| • SQL, DDL and DML | • Relational & Object Oriented Databases |
| • UNIX and RDBMS | • CORBA |
| • OLE/Active X | • S-Plus |
| • Optima | |
| • Objective C | |

As an IT professional, you will be involved with the analysis, design, coding, and testing of trading applications. Ideal candidates will have an undergraduate degree in Computer Science, 2-5 years of technology experience, and the ability to work effectively in a team environment with minimum supervision. Financial industry experience is preferred.

We offer a fun and exciting work environment including a casual dress code. Our compensation and benefits are among the best. Interested candidates are encouraged to respond immediately with resume and salary history to: SBC Warburg, Human Resources-IT, 141 W. Jackson Blvd., Chicago, IL 60604. Fax: (312) 554-5941. NO PHONE CALLS PLEASE. SBC Warburg is an equal opportunity employer.



SBC Warburg

A Division of Swiss Bank Corporation

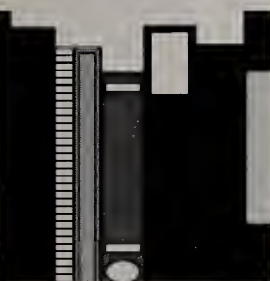
ALL YOU NEED IS
FREE
SEARCHING
NO CHARGE
TO SEARCH
THE DATABASE!
ACCESS • INTERNET

**CAREER
AGENT**
careeragent.COMPUTERWORLD.com

COMPUTERWORLD
FALL
Campus
Edition

Issue:
October 31, 1997
Advertising Deadline:
September 17, 1997

1-800-343-6474
x8000



CONTROL YOUR DESTINY. TAKE CHARGE OF YOUR FUTURE. EXPAND YOUR HORIZONS.



IF YOU'RE SEARCHING FOR...

- UNLIMITED GROWTH POTENTIAL
- CUTTING-EDGE TECHNOLOGY AND BUSINESS PRACTICES
- THE SECURITY OF A COMPANY RANKED 12TH ON THE FORTUNE 500 LIST
- A COMPETITIVE BENEFITS AND SALARY PACKAGE....

CONSIDER STATE FARM.

BECOME PART OF OUR TALENTED TEAM OF DEDICATED I.T. PROFESSIONALS WHO HAVE MADE STATE FARM THE INDUSTRY LEADER. AND, WE'RE LOCATED JUST TWO HOURS FROM CHICAGOLAND.

DYNAMIC. REWARDING. FUN.

YOU CAN SETTLE FOR ANY JOB, OR YOU CAN INVEST IN A CAREER AT STATE FARM.

PLEASE REFER TO JOB CODE CW1/IT WHEN EMAILING OR FAXING YOUR RESUME'

Email: HRSF@STATEFARM.COM. OR
Fax: 309-763-2831



STATE FARM INSURANCE COMPANIES • HOME OFFICES: BLOOMINGTON, ILLINOIS • www.statefarm.com • AN EQUAL OPPORTUNITY EMPLOYER



Fiserv, Inc. is a leading provider of data processing products and services for the financial industry. Our environment contains multiple IBM Mainframe processors running MVS/ESA, OS/390 and JES 2. A full complement of premier software is utilized in the support of our mission. Our extensive voice and data networks place us as one of the top industry telecommunications providers.

MAINFRAME PROGRAMMER/ANALYST

A challenging opportunity for a highly motivated and qualified individual. Candidate should have a minimum of three years COBOL programming experience on IBM systems utilizing MVS, TSO, ISPF/PDF, SDSF, VSAM and JCL. Applications include on-line financial and accounting systems. Good customer interaction skills a plus.

NETWORK CONTROL ANALYST

Candidates will have three to five years progressive experience in Voice and Data Communications. Responsibilities would include problem isolation and resolution coordination between service providers and equipment vendors on behalf of our clients in both WAN and LAN/WAN environments. Knowledge of network management and analysis equipment required. Working knowledge of Microsoft Office and Network Diagramming software a plus.

We offer a competitive salary and benefits package. Interested candidates should mail/fax resume and salary history to: **Fiserv, Inc., Human Resources, 707 W. Algonquin Road, Arlington Heights, IL 60005-4415. FAX (847) 956-8978.**

E-mail: general_info@fiserv.com



EOE M/F/D/V Drug-free workplace



<http://careers.computerworld.com>

Our consultants are the reason for our success.

Join one of Chicago's most progressive and fastest growing client/server consulting firms. We are committed to providing you the opportunities to make an impact. At BeggsHeidt you will be empowered to provide our Fortune 500 clients with cutting-edge technological solutions and innovative methods. With a solid commitment to training and R&D, and a culture that fosters innovative ideas, BeggsHeidt attracts the top dynamic and entrepreneurial technical minds in the industry.

Data Warehousing, Technical & Data Architect, Project Manager, C/S Programmer, Programmer/Analyst, C/C++, Visual Basic, PowerBuilder, PeopleSoft, Oracle, Sybase, Java

Resumes may be submitted to: **BeggsHeidt Enterprise Consulting, Attn: Recruiting CWCC, 641 West Lake Street, 5th Floor Chicago, IL 60661 FAX: 312-382-0443 E-Mail: staffing@beggsheidt.com EOE**



<http://www.beggsheidt.com>

Computer/Info Systems

COBOL PROGRAMMERS & PROGRAMMER ANALYSTS

Moore BCS is a division of Moore Corporation Limited, the leading global partner helping companies communicate through print and digital technologies.

Over the past four years, Moore Business Communication Services has achieved phenomenal growth. Join us and become a part of the action in the high speed electronic printing industry! We boast ISO 9000 certification, and expect to maintain industry leadership into the twenty-first century. Our talented software professionals create electronic printing solutions to meet our clients' critical needs.

We are looking for dynamic, deadline-oriented individuals with a degree in computer science (or related field) and a minimum of two years experience with COBOL, and MVS/JCL in an IBM mainframe environment. Experience with Group One software and programming for a high speed printing application are pluses.

We offer a competitive salary plus bonus and comprehensive benefit package, including a retirement and savings investment plan. If you enjoy being part of the solution, join our growing team. Please fax or mail your resume with salary requirements to: **MOORE BUSINESS COMMUNICATION SERVICES, Attn: Human Resources, 3 Hawthorn Parkway, Suite 160, Vernon Hills, IL 60061, FAX: (847) 367-3035. Committed to Employment Equity. We thank all applicants. Only those selected for an interview will be contacted. The Moore Internet address is <http://www.moore.com>**

MOORE BUSINESS COMMUNICATION SERVICES
Smarter by design

Taking Care of Business.

CHICAGO CAREERS

Peoples Gas,
the natural gas
utility and
energy
provider for
Chicago, has a
growing
Information
Technology
Services
division. We
are looking
for customer
focused
professionals
to grow with
our team in
these exciting
opportunities:

the Opportunities!

MVS Sr. Systems Programmer

Requires: systems programming experience in MVS/ESA JES2 environment; proficiency with TSO, ISPF, CLISTS, REXX, JCL and Assembler; experience in security administration and support (RACF).

CICS Systems Programmer

Requires: 2 years experience in CICS support, reading CICS system dumps and trace tables; ability to code Command Level programs in COBOL II and Assembler; ability to use MVS, JCL, IBM utilities, TSO/ISPF.

Programmer/Analyst & Sr. Systems Analyst

Requires: minimum of 3 years experience in mainframe programming utilizing COBOL II, VSAM, DB2, CICS, JCL and on-line debugging tools; experience in major system support, including analysis, test plans and implementation. Sr. position also requires experience writing program specifications and coaching others through work.

Sr. Customer Support Representatives

Requires: minimum of 5 years experience providing 3rd level customer support in a fast paced environment; extensive experience in supporting Win NT workstations and MS Office; hardware, software, and Win NT LAN troubleshooting skills.

All of these positions require a bachelor's degree in Computer Science or a related field, excellent communication skills, and the ability to work with a team.

We offer competitive salary and benefits, including an outstanding tuition reimbursement benefit. Come explore the opportunities! Salary history and requirements must be included for consideration. Please send resume to: Peoples Gas Light and Coke Co., Employment & Staffing - Concourse Level, Attn: D. Stewart/CW-Box 6897, 130 East Randolph St., Chicago, IL 60601; fax: 312-240-4697. EOE M/F/D/V



The Peoples Gas Light & Coke Company
I.T. CAREER OPPORTUNITIES

INFORMATION TECHNOLOGY



We're just another
IT Company,
the way the **Moon Walk**
was just another outing.

Throughout history, exceptional events have always needed a time and place to happen. Cap Gemini — a leader in information technology and a member of the world renowned Cap Gemini Sogeti Group — is your time and place for extraordinary achievement.

The demand for our Client/Server and Year 2000 services has created immediate opportunities for professionals with skills in:

- COBOL
- IMS
- DB2
- CICS
- ORACLE
- C/C++

For more information concerning our attractive salaries, generous benefits package and exceptional opportunities, send your resume to: CAP GEMINI America, Attn: Dean Bouchard, Staffing Specialist, 5 Westbrook Corporate Center, Suite 600, Westchester, IL 60154. Fax: 708-531-1370. An Equal Opportunity Employer.



CAP GEMINI

Reserve
your
placeChicago
AreaCORPORATE
TECHNICAL
RECRUITING
CONFERENCE

August 25, 1997

For
information:
1-800-488-9204

Computer
Info/Systems

**M.I.S./INTERNET
MANAGER**

PLEASE! NO TELEPHONE CALLS OR FAXED RESUMES. ONLY APPLICANTS WHO SEND A COVER LETTER WITH SALARY HISTORY WILL BE CONSIDERED.

Daewoo Motor, the automotive arm of the Daewoo Corporation, is revving up to become one of the world's largest automotive car makers. Daewoo Motor America (Central), Inc. is developing an aggressive start-up M.I.S. Team.

We are seeking an experienced M.I.S./Internet Manager with strong WebSite, Internet/Intranet/LAN networking proficiency. You must be able to implement existing automotive programs, as well as maintain and modify those programs as required. You will work closely with other regions nationwide in the implementation, modification, and maintenance of this department as well as the Daewoo Motor America (Central), Inc. WebSite.

You must be customer-service and people oriented with an international focus. Requirements also include a B.A. or B.S., preferably in the field of M.I.S. (a degree in any of the computer sciences would also suffice), coupled with not less than 10 years of management background and 5 years of heavy internet/LAN (set-up and maintenance) experience.

We offer highly competitive salaries and excellent benefits. If you are excited by the challenge of pioneering a new automobile company in the U.S., please send a cover letter with salary history and your resume to:

**DAEWOO MOTOR
AMERICA (CENTRAL), INC.**
ATTN: Human Resources Division - M.I.S.
3206 North Kennicott Avenue
Arlington Heights, IL 60004-1428

IT OPPORTUNITIES

We build systems and products that support higher education. Last year the Commission extended more than \$895 million in financial aid to over 256,000 students.

SENIOR APPLICATION DEVELOPERS

Staff will maintain existing applications, as well as design and implement future systems. Position requires 3 years hands-on experience in IMS DB/DC, MVS, COBOL.

DBA TRAINEE

Will train you to support IMS data infrastructure. Position requires 3-5 years experience in IMS DB/DC, MVS.

APPLICATION TEAM MANAGER

Position will manage application developers who maintain and develop a wide variety of scholarship and grant programs. Position requires a hands-on professional with 5 years of experience.

We have a casual, team-oriented environment that embraces diversity and originality. We offer an excellent benefits package including 5 WEEKS VACATION, deferred compensation, 10 training days per year, and flex-time. Submit your resume with salary history to:

Human Resources and Development - 3510



**ILLINOIS STUDENT
ASSISTANCE COMMISSION**
1755 Lake Cook Road
Deerfield, IL 60015
Fax: 847-831-8519

Equal Opportunity Employer M/F/D/V

FURKON



Bridging Business & Technology

Are You Year 2000 Ready?

In a world of infinite career opportunities leading to a dead end, you need a vehicle that will lead you to a challenging and lucrative future. As a premier strategic technical consulting firm, FURKON is that company. Our focus is on Client/Server technology and systems integration practices utilizing "state-of-the-art" technologies and Open Systems standards. Through our commitment to excellence in product quality, FURKON serves as a powerful partner to Fortune 500 clients in their efforts to manage information in the complex and dynamic environment of the Information Age.

Because of our reputation for excellence and an increased demand for our services, we have immediate openings for innovative, talented entry-level and experienced individuals with these skills:

- C/C++
- UNIX
- Windows (3.x, NT, 95)
- Delphi
- Java, Cafe
- CGI, HTML
- IPX/SPX, ISDN, TCP/IP
- GUI Development (Visual Basic, PowerBuilder)
- CORBA
- Internet/Intranet
- Oracle, Sybase, Informix
- Project Management
- Systems Design/Architecture
- WAN Design/Architecture
- Network Management

Take control of your future! FURKON offers an environment where career growth is highly promoted and salaries are very competitive. Forward your resume to: FURKON, INC., Attn: Recruiting, 20 South Clark St., Ste. 3000, Chicago, IL 60603. Fax: 312-641-5289. E-mail: ssloan@furkon.com EOE M/F/D/V

Reserve
your
placeNew
EnglandCORPORATE
TECHNICAL
RECRUITING
CONFERENCE

November 17, 1997
Boston Marriott Burlington
Burlington, MA

For information:
1-800-488-9204

IT'S A WILD LIFE ON THE LEADING EDGE OF TECHNOLOGY!

BE HERE!!

PLATINUM technology inc., is dedicated to helping IT organizations worldwide perform better. We are seeking the following professionals to join our team:

**Online Communications Manager
Database Management Division • Chicago, IL**

Responsibilities include the successful worldwide management of online database-related activities. Experience with HTML as well as exposure to DBMS technology and product sales is essential.

Inside Sales Representative • Chicago, IL

2-4 years sales and customer service experience in the software related/high-tech industry and knowledge of business-to-business telephone sales techniques required. Strong closing skills & self-motivation essential.

Education Inside Sales Representative • Chicago, IL

Responsibilities include the development of vendor/client relationships, booking of education engagements and meeting quota objectives. This specialized sales position requires 2-4 years of experience with the sale and coordination of instructor-lead training.

Software Engineers/Product Specialists • Nationally

2+ years experience in the software industry, preferably in the areas of DBA, Systems Admin., or Application Development and experience on at least two of the following platforms essential: MVS, Windows NT, Windows/Windows 95, and/or UNIX. RDBMS experience is desired. Extensive product training will be provided. 60% travel is required, with the option to travel exclusively within the US or internationally.

Proposal Writer • Oakbrook Terrace, IL

1 - 2 years of Technical Writing experience, strong interpersonal skills and the ability to manage stressful situations essential. English or Computer Science degree a plus. Computer industry experience preferred.

Technical Writer • Oakbrook Terrace, IL

Excellent oral/written communication skills and the ability to work independently, and as part of a team essential. Must be able to quickly grasp technical topics and material. Bachelor's degree in English, Computer Science, or related field required. Experience in writing materials for computer software for Windows and Mainframes desired.

Marketing Writer • Oakbrook Terrace, IL

Strong analytical skills, a proven background in technical writing and 5+ years of experience in writing marketing brochures, strategic and technical white papers, and product content for the Web a must. Familiarity with QuarkXpress a plus.

We not only have exceptional benefits but we also offer tuition reimbursement, the freedom and flexibility to be your own leader and a casual dress atmosphere. If you feel that you belong on our team, send your resume, indicating position of interest. Because PLATINUM uses resume scanning technology, please submit your resume in the following manner: For U.S. Mail/Fax please use 12 point font with minimal use of bullets, italics, underlining and bolding. For e-mail/Internet please use ASCII format.

PLATINUM
technology

PLATINUM technology, inc.
Attn: Staffing Services -ANCWS\$087
1815 S. Meyers Rd., Oakbrook Terrace, IL 60181-5241
Fax: 800-655-9987
e-mail: staffing@platinum.com

www.platinum.com

PLATINUM is an affirmative action/
equal opportunity employer, rich in diversity

COMPUTERWORLD
FALL
Campus
Edition

Issue:
October 31, 1997

Advertising Deadline:
September 17, 1997

1-800-343-6474, x8000

Computer/Info Systems

Excellence

Through
Partnership.

Trilogy Consulting Corporation, an innovative solutions provider with offices throughout the country, is excited to have opened our newest office in Chicago. This presents an exceptional opportunity for professionals with skills in:

- ORACLE
- C++
- COBOL
- DB2
- SAS®
- POWERBUILDER

Achieve a new level of excellence through a partnership with Trilogy. We offer a competitive compensation and benefits package. For more information, call our Representative at 1-800-323-7528, or mail/e-mail your resume, with salary history, to: Trilogy Consulting Corporation, Attn: Recruiting, 8700 W. Bryn Mawr, Suite 834 South, Chicago, IL 60631. E-mail: resumes@trilogysa.com Visit our web site at <http://www.trilogysa.com>

Trilogy
CONSULTING CORPORATION
eoe

Tomorrow Dawns a Little Early at ANDERSEN WORLDWIDE

communication skills and proven ability and interest to learn new technologies. A BS/BA degree or equivalent experience required.

FIREWALL & INTERNETWORK ADMINISTRATOR

An exciting opportunity exists for a candidate possessing 1-4 years experience on Internet Firewalls, UNIX Systems Administration (SUN OS/Solaris), and the TCP/IP protocol suite. The candidate should also have experience and proven skills in at least three of the following areas: Network management/ SNMP including HP OpenView and Sun Net Manager, external E-mail connectivity and SendMail configuration, C/C++ Programming and/or advanced UNIX shell scripting, Lotus Notes, Cisco Routers and routing fundamentals (e.g. access lists/filtering of TCP/IP traffic on routers). A Bachelor's degree in Telecommunications, Computer Science or Information Systems is required. (Ref Code: F&I)

APPLICATIONS DEPLOYMENT & INTEGRATION ASSOCIATE/ ANALYST

The Associate/Analyst position is in the Applications Deployment and Integration (ADI) team within the Application Technology and Support (ATS) group. ATS supports more than 1000 users at Andersen Worldwide. The position involves working with customers, developers and administrators to implement new hardware or software releases as it relates to the LAN and PCs, developing and executing test plans and installing and configuring hardware/software.

The ideal candidate should possess a Bachelor's degree in a relevant field (e.g. Computer Science, Information Systems), or equivalent work experience and outstanding customer service skills. Experience with a majority of the following technologies is preferred: Novell NetWare, Lotus Notes, Microsoft Suite of Products, MS Access/Visual Basic, PC/LAN software and hardware installation and configuration, Windows and Windows networking configuration. (Ref Code: KMHWS)

ASSOCIATES FOR SECURITY FIREWALL DESIGN & IMPLEMENTATION

Challenging positions are available in our Security Design & Implementation group. The ideal candidates should have a passion for systems security and possess 2-4 years experience in product evaluation, testing and implementing systems using at least three of the following technologies: Internet access solutions, UNIX, external E-mail connectivity, Cisco Routers, Remote Access or Novell NetWare. (Ref Code: SD&I)

To learn more about ISS and our other open positions, please visit our web site at:
<http://www.awo.com>

We offer a competitive salary, comprehensive benefit package and opportunity for growth. Please email, mail or fax resume, cover letter and salary history to: Andersen Worldwide, Information Systems Services Division, Attn: ISS Recruiting, 225 North Michigan Avenue, Chicago, Illinois 60601-7600. E-mail: iss-web-recruiting@awo.com Fax: 312-507-2548. **IMPORTANT: REFERENCE CODE FROM ABOVE AND SALARY HISTORY MUST BE INCLUDED ON COVER LETTER.** Equal Opportunity Employer M/F/D/V

ANDERSEN WORLDWIDE

3500 Jobs

www.ComputerJobs.com

The
ComputerJobs
Store

VISIT TODAY

Faculty Positions

ROBERT
MORRIS
COLLEGE

Robert Morris College is a non-profit, private institution which awards numerous Associate Degrees and a Bachelor Degree in Business. A full-time Computer Science instructor is needed for the Springfield, Illinois campus. Part-time Computer Science instructors will also be needed for the Chicago and Orland Park campuses. A Master's Degree is required. The candidates selected for the positions will be expected to demonstrate a clear love for teaching and working with students. Send a letter of application stating whether you are interested in the day or evening division, a resume and transcripts to: Human Resources, Robert Morris College, 180 North LaSalle, Suite 903, Chicago, IL 60601 or fax to (312)836-4611.

CHICAGO CAREERS

Who Says We're a Household Name?

Fortune Magazine & COMPUTERWORLD

That's who. Here's your chance to work with a **Fortune 500** company that has enjoyed a leading status in the financial industry for over 100 years and has achieved record growth for 5 consecutive years. Named by Fortune Magazine as a **"Most Admired"** company and ranked #1 in Chicagoland in *Computerworld's* June 1997 issue of **"100 Best Places to Work in IS,"** we have extraordinary opportunities in an exciting industry. At **Household**, we seek candidates at all levels of experience and any or all of these skills:

- **COBOL***
MVS, DEC/VAX, IMS, CICS, VMS, DB2, OS/2
- **PowerBuilder • C/C++**
- **Systems Integrator**
Win 95, C, SYBASE, UNIX
- **Systems Programmer**
MVS, DB2, CICS
- **CICS Systems Programmer**
CICS 3.3 4.1, MQSeries
- **UNIX Communications Analyst**
SUN/Solaris, TCP/IP, NIS+
- **Senior Capacity Analyst**
MVS or UNIX, SAS or BGS
- **Communication Analyst**
Voice, Data

Become a part of our household—today. We offer great pay and outstanding benefits, including an industry-leading 401(k) plan, career development & continual training. For immediate consideration, forward your resume to: **HOUSEHOLD TECHNOLOGY & SERVICES, Attn: Human Resources, Dept. CW, 100 Mittel Drive, Wood Dale, IL 60191. Fax: (630) 350-6002. E-mail: recruit@household.com**

We're an equal opportunity employer.

* **COBOL** Programming at Household isn't just Y2K projects. We value our COBOL Programs and Programmers. We give you an opportunity to use your skills and abilities along with opportunity for personal development.

Note: benefit and incentive plans are subject to eligibility requirements.

www.household.com

Household

COMPUTERWORLD

FALL
Campus
Edition

Issue:

October 31, 1997

Advertising Deadline:

September 17, 1997

1-800-343-6474, x8000

IT OPPORTUNITIES IN CHICAGO!

Information Technology comes alive at Conesco's Chicago office. Bankers Life and Casualty Company, A Conesco Company, is a leader in the development and marketing of innovative insurance products. We've been in business since 1879 and now you have the chance to join us and become part of the Conesco difference with these opportunities:

ASSEMBLER & COBOL Programmer Analysts/ Sr. Programmer Analysts

These experienced through senior level programming positions require Assembler or COBOL programming experience plus the desire to work in an IBM 30xx OS/MVS environment. TSO/ISPF, JCL and Parvalet experience preferred. VSAM, CICS and PC experience also preferred. Life and health insurance experience a plus.

You'll enjoy an excellent salary and benefits package at our convenient location in Chicago's Merchandise Mart. For consideration, send your resume with salary history and requirements to: **Kathi Slomka, Employment & Recruiting**

BANKERS LIFE AND CASUALTY COMPANY

A Conesco Company

222 Merchandise Mart Plaza • Chicago, IL 60654-2001

FAX: 312-396-5969

E-mail: tvd90jm@banklife.com
(No attachments please)

We Support A Drug Free Workplace
Equal Opportunity Employer M/F/D

Relax.

Busy looking for a new contract or full-time position? Why don't you check out **DICE**? We have the hottest jobs the WEB has to offer! **DICE** makes your job search easy, with thousands of listings for Programmers, Analysts and Technical professionals for all areas of expertise and all levels of experience.

What's even better - we're **FREE**, providing detailed information so you can find the right contract or full-time position for YOU! Take a look for yourself!

www.dice.com

DATA PROCESSING
INDEPENDENT
CONSULTANT'S
EXCHANGE



Don't gamble with your job search. Use DICE.

A Service of D&L Online, Inc: 515-280-1144

ACCEPT THE CHALLENGE OF TECHNOLOGICAL EXCELLENCE

CHICAGO, IL OPPORTUNITIES



Heller Financial, Inc. is a leading commercial financial services company. Currently, we are seeking visionary professionals to join our I.T. Group at our Chicago, IL Corporate Headquarters. These integral roles require work in a multi-platform environment. Selected candidates must possess a Bachelor's Degree with excellent organization, communication and time management skills. A working knowledge of commercial lending and financial services is a plus.

CLIENT/SERVER

Programmer Analysts/
Business Analysts

Responsibilities will include the analysis and application development for various business systems. Business Analyst positions will also participate in developing project plans as well as design and/or modify technical solutions for internal client functions. Knowledge of Powerbuilder and/or Visual Basic is required.

Team Leaders

These key individuals will provide strong leadership to a team of I.T. application development and support professionals. Requires 6+ years of experience. Knowledge of mainframe and client/server technologies preferred.

MAINFRAME

Business Analyst

Responsibilities will include the analysis of business processes, design and implementation of solutions for our largest and most sophisticated mainframe system. Must be able to assist with design and troubleshooting efforts. Experience with COBOL, JCL, IDMS and ADS/O or CICS required.

Heller understands the importance of rewarding our professionals with an outstanding compensation package, including a full array of benefits, tuition reimbursement and a company-wide bonus plan. You will also enjoy a convenient location near train stations. Please send resume to: **HR/AD, HELLER FINANCIAL, INC. 500 W. Monroe, 13th Floor, Chicago, IL 60661. Fax: (312) 441-7256.**



Heller Financial

(eoe)

THE BEST MINDS, THE BEST OPPORTUNITIES

IMPROVE THE STATE OF YOUR CAREER.

Fidelity is coming to Rhode Island.

The world leader in mutual funds, discount brokerage, and retirement services opens in Smithfield, RI, in the spring of 1998. So now is the time to join our growing team.

Leading the charge is Fidelity Investments Institutional Services Company (FIIS). The Systems Division of FIIS develops and supports both existing and emerging applications to support transfer agency services. Development is done in a client/server environment using Windows NT and UNIX, and in a mainframe environment using COBOL, CICS and VSAM.

Initially you will work in our Marlborough, MA, facility while the Smithfield site is being completed. When construction is finished, you'll be among the first to shape the state of our brand new complex in Smithfield, Rhode Island.

So upgrade the state of your technology career. Contact Fidelity today.

HOW TO RESPOND

Please specify Job Code CL2271 on all responses.

MAIL

Fidelity Investments
Human Resources
82 Devonshire Street
Mail Zone MM1H
Boston, MA 02109

E-MAIL:

marlboroughstaffing@fmr.com

EQUAL OPPORTUNITY

Fidelity is proud to be an equal opportunity employer

BENEFITS

- Three-part capital accumulation plan with 401(k)
- Comprehensive health/dental insurance
- Emergency backup childcare
- Life insurance program with investment options
- Company-paid pension plan
- Programs for working families
- Tuition reimbursement

IMMEDIATE TECHNICAL OPPORTUNITIES AVAILABLE IN
MARLBOROUGH, MA - MOVING TO SMITHFIELD IN '98:

- COBOL, CICS, VSAM
- Software Testers
- UNIX and Client/Server Developers (C, C++, Visual Basic, Powerbuilder)
- Oracle Database Designers
- UNIX and LAN Administrators

Fidelity Investments

Global Resource Management

Technology Consultants

YEAR 2000

Project Managers IMS DB/DC
\$120,000 \$90,000

GLOBAL RESOURCE MANAGEMENT

7785 Baymeadows Way, Suite 108

Jacksonville, FL 32256

800-408-8005 (voice) • 888-408-8006 (fax)

CONSULTANTS

IMMEDIATE INTERVIEWS: FLORIDA & NY/NJ/CT

MAINFRAME

- OB2 or CICS
- VAX/COBOL
- Internals
- Focus
- Bus/Analysts
- OBAs
- Year 2000
- SAP
- PL1
- BAL
- Natural 2
- AS 400
- CSP
- IMS
- IDMS/AOSO
- Cobol
- Modelers
- Stratus
- CICS 6000
- Qual Assur
- Tandem
- Unisys/Cobol

CLIENT SERVER

- Lotus Notes
- Sybase
- Unix
- C or C++
- HTML/JAVA
- Sys/Admins
- PowerBuilder
- Help Desk
- Qual Assur
- Ingres
- Smalltalk
- Win NT or 95
- Visual C++
- OBAs
- Peoplesoft
- Oracle
- NT Upgrade
- TCP/IP
- Vis Basic
- HP Sys/Admin
- Encina
- LAN/WAN
- FileNet
- Informix
- Testers
- Device Drivers
- Tech Support
- Novell
- CORBA
- OOA/OOO

Rohn Rogers Consulting

Attn: Roger Sichel Steve Wyne

1185 6th Ave., 36th Fl 1451 W. Cypress Creek Rd.

New York, NY 10036 Ft. Lauderdale, FL 33309

800-421-5158 • 212-921-1319 954-489-2700

Fax 800-770-6360 Fax 954-489-6474

http://www.rohnrrogers.com

Programmer Analyst, Louisville, KY. Analyze/dsgn/prgm & implmnt SYBASE based MRP applic. Define transaction process logic utilizing Entity Relationship & Data Flow Diagram methods. Utilize transaction processing logic to create applic specs for Order Processing/Scheduling. Materials processing & Order Requisition/Distribution subsystems. Dsgn/prgm & implmnt SQL/C based Logical Record Facility to process d/base navigation calls. Dvlp SQL/C based s/ware for Materials Requisition-Order Scheduling interface. Dsgn test plan to comply w/unit & integration testing script for Quality Assurance system. Dvlp applic & system documentation for entire system. Req Masters-Mech/Indstl Mgt. or Comp Engg. Educ must incl following coursework or its equiv: Comp prgmg in any 3rd or 4th generation lang. Mgmt Info Systems, Info Systems Dsgn, Support Systems, Mfg Tech, Planning & Control Systems. \$38,100/yr. Send resume to: Jane Hosley, JO#KY0368079, Dept for Employment Services, 275 East Main St, 2W, Frankfort KY 40621.

PROGRAMMER ANALYST. Amex Computers, Inc. a Software Development & Computer Consultancy company seeks a full-time Programmer Analyst with 6 months exp using C++, Q Basic & Sigma Plt to design & develop software for the chemical & manufacturing industry; performing on-line optimization, simulation & off-line modeling using Aspen Plus & Hysym; providing tech support for MOD 300, DCS (Distributed Control System) operation & HASOP (Hazard Operability) for safe operation & emergency control for plants. Candidates will qualify with a Bachelors in Computer Science or Engineering. To apply please send your resume to: HR Dept., Amex Computers, Inc., 2672 Peach St., Erie, PA 16508.

Software Engineer - Integration Tools to design, implement & test software enhancements, including file/directory management, filesystem management, inter-process communication (IPC), process control, remote file transfer & portable software tools. Specifically, will prepare written specifications; perform source-level implementation of projects; analyze & resolve problems in projects or existing tools, including source-code fixing. Will research new tools & techniques for application. Requirements: B.S. (or equiv) in CS or CE plus 2 yrs exper in job offered or 2 yrs exper in software development, consulting or teaching CS applications. Candidate must also possess expertise in programming in C on UNIX & Windows NT; expertise w/ software development tools & debuggers under UNIX & Windows NT; expertise in program analysis & testing; and expertise in software configuration management & source code control. Sal: \$45,000/yr; M-F, 9-5. Resumes to: Case #70812, P.O. Box 8968, Boston, MA 02114 EOE. Applicants must be U.S. workers eligible to accept employment in the U.S. on a full-time basis.

PROGRAMMER/ANALYST to design, develop, test, analyze and modify computer programs and applications using AS/400, SDA, DFU, Sub Files, Query/400, Power Builder, SQL and Oracle; analyze, develop and modify existing data handling systems to evaluate effectiveness and develop new systems to improve EDP Processing using advanced computer techniques, develop and specify mathematical logical operations for computerized applications using RPG/CL/400 and ILE/RPG. Require: Bachelor's (or equivalent) in Computer Science/Mathematics and one year experience in the job offered. Salary: \$42,000 per year, 8:30 am to 5:30 pm, M-F. Mail resumes in duplicate to: Georgia Department of Labor, Job Order # GA 6131329, 2943 N Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office.

CHALLENGE. DRIVE. AMBITION. They work together to give you the lifestyle you want. But one component is missing - a great career that is as enjoyable as your leisure time. Find that missing piece as a member of Liberty Mutual's I/S team.

Liberty I/S has begun a major expansion of its software development centers and we have opportunities available at all levels for our strategic development initiatives. Choose from our corporate data center in the beautiful seacoast town of Portsmouth, NH or our Massachusetts development center conveniently located just off Rt 128/Rt 1 in Danvers, MA. You'll work in an OO Client/Server environment including Win95, NT, C/C++, VB, Sybase, DB2, RS6000-AIX and MVS/ESA. We are committed to employee development and keeping pace with the latest in cutting-edge technologies for the development of the best business solutions for our customers and our company.

We offer you a remarkable opportunity, backed by the strength and stability of Liberty Mutual, a company with over \$37 billion in consolidated assets. It's an opportunity that can provide you with the challenges, growth, experience, and lifestyle you are seeking.

STRATEGIC ARCHITECTS
TECHNICAL/FUNCTIONAL CONSULTANTS
PROJECT MANAGERS/PROJECT LEADERS
BUSINESS & DATA ANALYSTS/ARCHITECTS
OO CLIENT/SERVER DEVELOPERS
TECHNICAL & PROGRAMMER ANALYSTS
DATABASE ANALYSTS
SOFTWARE QA/TEST ANALYSTS
DESKTOP/NETWORK/TELECOM SERVICES

Liberty Mutual I/S.
It's Part Of
Your Lifestyle...



If you're ready to accept the challenge of one of the positions listed, please forward your resume to:
Bill Hickmott, Liberty Mutual Information Systems,
225 Borthwick Avenue, Portsmouth, NH 03801.
Fax: (603)431-0709; email: Jobs@Lmig.com

Liberty Mutual Group is an equal opportunity employer committed to workforce diversity.
Check out our web site: www.libertymutual.com

McKinsey & Company, the prestigious international management consulting firm, has an opportunity for a senior IT security professional at our New York City headquarters.

INFORMATION SECURITY

Relying on your experience in developing and promoting security programs in a global corporate environment, you will join a leadership team responsible for the design and implementation of IT security solutions. To qualify, you must have a Bachelor's degree (major in CS or MIS preferred) and 2-3 years' similar experience. Knowledge of the security capabilities of multiple technological environments is required, including Novell Netware, Windows 95, and Lotus Notes. Specific expertise in anti-virus software and Internet security is a plus. Strong analytical, communication, and interpersonal skills are essential.

We offer an attractive compensation and benefits package. For consideration, please send your resume with salary history to:

Box 717-JM, 12th Floor
360 Lexington Avenue, NY, NY 10017

An Equal Opportunity Employer M/F/D/V

McKinsey & Company, Inc.



As a leader in the legal publishing industry, we have provided information for over 175 years. Our success can only be attributed to the individuals that have shared our vision of the future. As a leader in the legal publishing industry, we plan on using our leading-edge technology to dominate our industry throughout the "Information Age".

SENIOR ANALYST PROGRAMMER

Business Systems

These positions involve the design, implementation, documentation, and maintenance of business information systems. Other functions include analysis of business and departmental procedures, providing training services to the user community, and assisting in broad analysis of corporate information needs.

Qualifications include:

- Knowledge of IDMS, ADSO, CULPRIT, and COBOL required.
- Four year college degree or equivalent experience.
- Four to six years programming and analysis experience with IDMS MAINFRAME systems required.
- Project management experience or training is a plus.
- Experience or training in Oracle, ACCESS or Visual EXPRESS are considered assets.
- Order management, customer service, inventory, manufacturing/distribution and/or A/R business systems experience is a plus.

LEXIS Law Publishing offers competitive salaries. Our exceptional benefits package includes comprehensive major medical, dental, life and disability insurance, 401k salaried savings plan, relocation benefits and more.

Send your resume and salary history to:

LEXIS Law Publishing



Human Resources, Job Code - SAP

P.O. Box 7587, Charlottesville, VA 22906-7587

Fax: (804) 972-7674

Additional Job Opportunities:

JOBLINE (804) 961-5555

Please visit our web site: www.michie.com

Equal Opportunity Employer

Applicants Only - No Phone Calls Please

INFORMATION TECHNOLOGY CAREER OPPORTUNITIES

STABILITY

NETWORK ENGINEER.....to 65K
Multi-million software client seeks N.E. familiarity with WAN, IP, IPX, SNA.

FINANCIAL SECURITY

C/C++ DEVELOPERS.....to 70K
Int'l national client looks for talented developer, relational data bases, NT, UNIX, DBJ, Oriented Developmt.

GROWTH

CLIENT SERVER DEVELOPERS .to 50K
Power builder C++, Oracle, Visual Basic, high profile client.

VISIBILITY

P.C. SUPPORT TECHNICIAN.....to 40K
Exp with/Novell Network, P.C. Office and WIN NT.

AUTONOMY

ORACLE PROGRAMMER.....to 50K
2+ yrs exp. in programming, 35 million division of 250 million parent company.

For Fwd. Please Call (617) 367-4200 or Fax Resume to (617) 367-4906. E-mail address Positionsinc@worldnet.att.net. Positions, Inc., One Faneuil Hall Marketplace, South Market 5th Floor, Boston, MA 02109.

IT SPECIALISTS

SYSTEMS ANALYST to provide specialized consultancy in the analysis, design, development, testing, implementation, maintenance and support of GUI-based computer systems and databases for various commercial applications using client/server technologies, Oracle, Sybase, SQL Server, PowerBuilder, Visual Basic, ER-Win, TCP/IP, and Novell Netware under Unix, DOS and Windows environments. Require: B.S. degree in Computer Science with two years experience in the job offered or in the related occupation of Programmer/Analyst; Extensive paid travel (50%) to client sites within the U.S.; Must be a Certified PowerBuilder Developer. Salary: \$55,000 per year. 8:30 am to 5:30 pm, M-F. Send resume to: Georgia Department of Labor, Job Order # GA 6129051, 465 Big Shanty Road, Marietta, GA 30066-3303 or the nearest Department of Labor Field Service Office.

SOFTWARE ENGINEER: Design and development of software for financial and banking industry using latest technologies including large distributed three-tier client/server methodologies for report generation. Requires M.S. in E.E. and 2 year experience in software development in client/server environment. Demonstrated knowledge of C, Visual C++, MFC, Windows SDK, MS Windows 3.1, UNIX, RDBMS and SQL Server. Demonstrated ability in network management and administration including writing, designing and coding network utilities on Novell Netware. Excellent communication and presentation skills. 40 hrs per/wk (9:00 a.m. to 5:00 p.m.) \$60,000.00/yr. Send two resumes/respond to Case # 70524, PO Box 8968, Boston, MA 02114.

Programmer/Analyst, Louisville, KY. Dvlp Computerized Property Resistance Simulation systm. Define test hypothesis & construct Entity Relationship specs for Logical Database model. Utilize a Numerical Analysis methodology to generate a Simulation Model for Clinical Trial Experimental procedures. Dsgn/maintain SYBASE d/base navigation & query structure that will store Process Ctrl data. Dvlp FORTRAN & SAS based Report Generation Facility to generate parameter based statistics for Property Analysis subsystem. Dvlp/implt & support FORTRAN based Instrumentation Support Documentation applic. Req. Bach-Engg or Comp Sci. Educ or exp to incl: Comp Pgmng, Numerical Analysis, Process Calculations, Process Ctrl, Process Instrumentation, Chem Tech, Chem Reaction Engg. 1 yr exp to incl proficiency w/dsgn, maintenance & support of Computerized Process Ctrl systm in Discrete Mfg, Shop-Floor or Research envrmtnts; dvlpmt/maintenance of Simulation S/ware (CPSS, SPSS or SAS) applics; & any 3rd or 4th generation prgmng lang in Mainframe or Minicom envrmt. \$38,600/yr. Resume to: Jane Hosley, JO#KY0368080, Dept for Employment Services, 275 E Main St, 2W, Frankfort, KY 40621.

SOFTWARE ENGINEER: Ability in using Oracle Database Administration tools Server Manager, Oracle Enterprise Manager, Import, Export, SQL *Loader, SQL *Plus; Demonstrated ability in backing up Oracle databases using exports, cold backups and hot backups. Proven ability in recovering the database from different types of failures; Ability in troubleshooting common Oracle database problems, and tuning applications with the Oracle diagnostic tools such as EXPLAIN PLAN and TKPROF; In-depth knowledge in SQL *Plus and PL/SQL, languages and proven ability in using UNIX, WINDOWS Operating Systems. The job duties are: Study existing system to evaluate effectiveness; upgrade systems presently in use; develop, test and implement new software; observe functioning of newly implemented systems and programs for trouble areas; correct systems/programs as necessary. Requires Masters in Engineering with two years experience in software development. 40 hours per week at \$60,000/ per year. Please send resume to Case # 70909, PO Box # 8968, Boston, MA 02114.

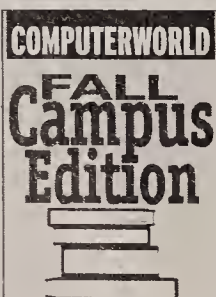
Programmer Analyst, Malden, MA; Analyze, design & develop Business Application software using Client/Server technologies using Oracle RDBMS with SQL*PLUS; PL/SQL, Pro*C under UNIX. Develop GUI applications using SQL*Forms 4.5, SQL*Reports 2.5. Req.d. Bachelors in Comp. Sci. or Engg. 2 yrs exp in job offered. Please send resumes to DB Concepts, Inc. 14 Summer Street, Malden, MA 02148. Attn: Manish Patel.

SOFTWARE ENGINEER: Design and development of software for financial and banking industry using latest technologies including large distributed three-tier client/server methodologies for report generation. Requires M.S. in Electronics Engineering and 2 years experience in software development in client/server environment. Thorough knowledge of Sybase, ODBC, UNIX Shell programming and Internals. Demonstrated ability in C/C++ programming including Visual C++ and MFC. Excellent communication and presentation skills. 40 hrs per/wk (9:00 a.m. to 5:00 p.m.) \$60,000.00/yr. Send two resumes/respond to Case # 70523, PO Box 8968, Boston, MA 02114.

Programmer - Modify info. systems in C++ & C. Maintain & admin. client & server networking platforms (Novell 4.X, Unix, Win, Dos) & database (Access). Set up internet applications for business & marketing (Visual Basic, CGI, Java). Min. req. inc.: 8.S. in CIS or MIS. Must be able to: upgrade PC database to SQL w/object oriented tech. & ability to use internet application technologies such as: Win95, Website, IIS, V8, CGI, & Java. May be obtained through 6 mos. exp. or college coursework. 40.0 hr/wk. \$37,038/yr. 9:00-6:00. Applicants send 2 copies of resume to: Georgia Department of Labor, Job Order #GA 613023S, 1535 Atkinson Road, Lawrenceville, GA 30243-S601 or the nearest Department of Labor Field Service Office.



<http://careers.computerworld.com>



Issue:
October 31, 1997

Advertising Deadline:
September 17, 1997

1-800-343-6474, x8000

Reserve your place

New England

CORPORATE
TECHNICAL
RECRUITING
CONFERENCE



November 17, 1997

Boston Marriott Burlington
Burlington, MA

For information:
1-800-488-9204

SAP


WORLDWIDE IMPLEMENTATIONS
**ALL
MODULES**
**FUNCTIONAL
CONFIGURATION
ABAP
BASIS**
**POSITIONS THROUGHOUT
THE U.S. AND ABROAD**

1975 North Park Place
Atlanta, GA 30339
800-599-9550
770-955-1714
FAX: 770-937-0423
e-mail: slc11@aol.com
EOE, MEMBER NACCB


**STRUCTURED
LOGIC
COMPANY, INC.**
SAP NATIONAL Implementation Division
selectjobs.com
**The Place to Post
Your Resume/Your Jobs**
**Matching Talent & Opportunity for
Computer Professionals**
SelectJOBS 954-424-0563
www.placeum.com
PLACEUM 2000 for I/S Professionals
Job Seekers

- FREE Job Search
- FREE Private E-mail
- FREE I/S Resume Posting
- to Qualified Job Seekers

Recruiters/Hiring Mgrs.

- Search quality Resume database
- Post/Search Hot List
- Unlimited I/S Job Postings
- Chat Rooms

PeopleSoft

We are seeking Professionals to join our PeopleSoft Consulting Practice—all modules. Contract & permanent positions available nationwide.



Attn: Craig Stevens
Tel. 1.800.676.7374 ext. 227
FAX +1630.717.0909
cstevens@trans-tech.com
www.trans-tech.com

Programmer/Analyst - client site in Boston, MA. Design & develop enhancements to s/ware modules as part of financial applications; write/modify source code; implement, test, debug, integrate w/database; use: DB2, MVS/XA, VSAM, Cobol II, Bachs/Comp. Sci. or Comp. Applies or Engg or Math. 2yrs/exp. in job offered. 40hrs/wk (9-6; M-F) \$51,000/yr. Send resume in dupl to: Case #70814, PO Box #8968, Boston, MA 02114.

spearhead™

SAP

PROFESSIONALS

Fast-growing national and international consultancy with a reputation for first-class consultant offers
WORLD-WIDE CAREER OPPORTUNITIES FOR TOP QUALITY PROFESSIONALS

CURRENTLY STAFFING PROJECTS IN:

US, Canada, South America, Pacific Rim and Europe: especially in these skills and industries: FI/CO, Basis, ABAP/4, PM, MM, WM, PP, SD, EDI in SAP Environment, Supply Chain/Manufacturing, Utilities and Retail Experience in a SAP Environment.

Sales: US based positions available in both national/international sales for experienced professionals.

Recruiting: Positions available in our New York City area offices for experienced technical recruiters.

Competitive compensation with performance incentives; comprehensive benefits package.

- ▲ EXPERIENCED PROJECT MANAGERS \$ 180K +
- ▲ TEAM LEADERS \$ 150K +
- ▲ CONSULTANTS \$ 100K +

Send Resumes to the Attention of David Epperly

spearhead™
SPEARHEAD SYSTEM CONSULTANTS (US) Ltd.

99 Seaview Blvd., Suite 340, Port Washington, NY 11050 • voice 516-625-9000, fax 516-625-9687
55 Broad St., Suite 13F, New York, NY 10004 • 212-968-1346, 212-968-1348, fax 212-968-1352
e-mail david.epperly@spearhead.com • www.spearhead.com
1.888.spearhead
SAP™ National Implementation Partner

CIBER

CIBER, Inc. is a nation-wide leader in Information Technology and management consulting. CIBER's Seattle Branch Office is looking to hire:

- **Systems Programmers**
MVS (SMS, IMS), ADABAS, CICS, DB2
- **Senior Programmer/Analysts**
COBOL, CICS, DB2, NATURAL
- **UNIX Systems Administrators**

Challenging opportunities, top salaries & benefits.

Send resume to: Human Resources/CW, 2125 112th Ave., NE, Suite 201, Bellevue, WA 98004-2948 Fax: 425-455-5190
E-mail: jobs@tmg-usa.com; Web: www.ciber.com.

EOE/AA

Mgr., Application Programming

Univ. of New Mexico. Technical Mgr./Supervisor Control. Direct, plan the dev., maint. install of complex systems using all phases of systems analysis and design. Provides & manages on-call support. Coordinates work of staff, providing technical support, direction. Guides users in formulating requirements; leads or participates in the development of user project proposals. Req'd BA+3 yrs. direct experience. Prefer 2 yrs. as Project Mgr. lead analyst & supervisor, exp. with Structured Analysis & COBOL, IDMS, Oracle SAS, MSACCESS, Visual Basic; Effective interpersonal skills. Include employment mo/yr on resumes with a signed cover letter to Human Resources. Attn: Req. #971842A D-C 1717 Roma NE, Albuquerque, NM 87131. For complete copy of vacancy announcement, visit our Website @http://www.unm.edu/~hrnet/jobs; Closing 8/29/97.



The University of New Mexico

SOFTWARE ENGINEER: Master in Electrical Engineering or Computer Science. Research, design, and develop computer software systems, in conjunction with hardware product development, for cardiology applications, applying principles and techniques of computer science, engineering, and mathematical analysis. Analyze software requirements to determine feasibility of design within time and cost constraints. Consult with hardware engineers and other engineering staff to evaluate interface between hardware and software, and operational and performance requirements of overall system. Formulate and design software system, using scientific analysis and mathematical models to predict and measure outcome and consequences of design. Develop and direct software, system testing procedures, programming and documentation. Consult with customer concerning maintenance of software system. Coordinate installation of software system. Designs, develop implements software systems in conjunction hardware development for cardiological system applications. Must be knowledgeable in Digital Signal Process. \$41,800.00/yr. 40 hr./wk. Apply at the Texas Workforce Commission, Houston, Texas, or send resume to Texas Workforce Commission, 1117 Trinity, Room 424E, Austin, Texas 78701, JO# TX7857679 and Ad Paid by an Equal Opportunity Employer.

PSC OUR STAFF MAKES US #1, WE NEED YOU TO KEEP US THERE!

We have immediate openings in Phoenix, Arizona for highly motivated and career oriented consultants with at least 2 years experience in one or more of the following:

MAINFRAME

- COBOL
- SAS
- DB2
- IMS
- CICS
- IDMS
- IMS and/or DB2 DBA
- Banking/ACH/COBOL

DISTRIBUTED/CLIENT-SERVER

- C/C++
- Designer/Developer 2000
- Java/CGI/HTML/ActiveX
- Visual Basic and/or PowerBuilder, SQL
- Informix
- Oracle Financials
- Gentium
- Form Flow

SOFTWARE ENGINEER

- UNIX/C/MOTIF
- UNIX/C++/CORBA

PLEASE CALL, MAIL OR FAX RESUMES TO:
Professional Software Consultants, Inc.
Keith Volk

4747 N. 7th St. #424, Phoenix, AZ 85014
(800) 279-4498, Fax (602) 279-1161
resumes@psc.dpcc.com

Member NACCB
A DPCC Company

Director

University Information Systems

Wayne State University seeks an individual to lead the University Information Systems Department. The director will provide overall leadership for the development, implementation, and operation of WSU's administrative information systems.

Qualifications include:

- Superior leadership ability to direct a large professional staff delivering high quality application solutions to administrative users.
- Broad understanding of technology and the role that new technology should play in the development of computer-based information systems;
- Ability to manage within a diverse environment of hardware, software and personnel resources; and
- Demonstrated success managing the completion of large, complex software projects.

Please mail letter and resume by **August 31, 1997** to:

Ms. Kay Jorgensen
UIS Director Search Coordinator
WSU Computing and
Information Technology
5925 Woodward Ave.
Detroit, MI 48202



WAYNE STATE UNIVERSITY

Wayne State University is an equal opportunity/affirmative action employer. All buildings, structures and vehicles at WSU are smoke-free. Wayne State University people working together to provide quality services.

System Analyst — Maintain, construct, and manage the Company's LAN using a variety of tools including assembly languages, test, inspect and troubleshoot PC hardware problems; locate software setting problems related to the Company's products; perform PC hardware assembling; evaluate the latest computer technology and recommend new products; prepare the fax-on-demand projects; design the WWW home page for the Company; test and use the WWW home page maker for the Company's future development. Req. Bachelor Degree in Computer Science plus 6 months exp. in the job offered. Salary \$39,000/yr. Work 9:00am to 6:00pm. Send two resumes to Georgia Dept. of Labor, Job Order # GA 6130268, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

New England CORPORATE TECHNICAL RECRUITING CONFERENCE



October 6, 1997

For information:
1-800-488-9204

OFFICIAL RULES - NO PURCHASE, PAYMENT OR CONTRIBUTION NECESSARY - To enter the Sweepstakes outlined below, follow all entry instructions published in this offer. Your entry must be received by the date specified elsewhere in this offer or by 1/15/98, whichever is sooner.

Super Prize Sweepstakes - Winners will be selected in random drawings from all eligible entries received. Early Bird winner will be selected in a separate drawing from among all eligible entries. Sweepstakes begins 9/3/96. Drawings will be conducted on or about 4/30/98 by Ventura Associates, Inc., an independent judging organization whose decisions are final. Drawing will be held at 1040 Avenue of the Americas, New York, NY 10018. You need not be present to win.

CONSUMER DISCLOSURE Different creative presentations of the sweepstakes may present different prize choices. Values at a given prize level will be approximately the same. All prize winners will have the option of selecting any prize offered at level won. Number, estimated maximum retail value and odds of winning each prize are as follows: 1 Grand Prize - \$25,000 (or cash alternative of \$25,000); 1 First Prize - \$2,000; 1 Second Prize - \$1,000; 50 Third Prizes - \$80; 1,000 Fourth Prizes - \$65 each; 1 Early Bird Prize - \$5,000. Total prize value: \$102,000.00. Certain creative presentations of the Super Prize Sweepstakes may present an Early Bird Prize. To qualify for the Early Bird Prize, if the Early Bird Prize is presented in your offer, your entry must be received by the Early Bird date specified elsewhere in this offer. Odds of winning any prize are determined by the total number of eligible entries received. Distribution of sweepstakes will not exceed 300 million. All Super Prize Sweepstakes prizes will be awarded.

Automobile, boat/trailer prizes must be picked up at local dealer. All other merchandise prizes will be shipped to winner. Boat/trailer and/or automobile title, tags, license and registration fees are winner's responsibility as are any other incidental expenses not specified in the offer. Trip prizes subject to availability and must be completed within 12 months of date awarded. Actual values of trips depend on location of winners and fares at time of departure. Certain restrictions and blackout dates may apply. If a trip prize is won by a minor, minor must be accompanied by a parent or legal guardian. Winner's traveling companion will be required to sign a release of liability prior to departure. Trip prizes are on a space available basis and do not include personal purchases or incidentals. No substitution of prizes, except sponsor reserves the right to substitute a prize of equal or greater value in the event an advertised prize is unavailable.

For winners list (available after 6/30/98) send self-addressed, stamped envelope by 1/15/98 to: Super Prize Winners, P.O. Box 9193, Medford, NY 11763-9193.

THE FOLLOWING APPLIES TO THE SWEEPSTAKES ABOVE - No purchase, payment or contribution necessary to enter or win. No photocopied or mechanically reproduced entries will be accepted. Not responsible for technical malfunctions, failure of computer, telephone equipment or software, inaccurate transmission of entry information or for lost, late, misdirected, damaged, incomplete, illegible or postage-due mail. All entries become the property of sponsors and none will be returned.

Winner notification will be by mail. A winner may be required to sign and return an Affidavit of Eligibility/Liability/Publicity Release within 14 days of date printed on notification or he/she will be disqualified. Any prize/prize notification returned as undeliverable will result in disqualification. If a major prize is won by a minor, it will be awarded to parent or legal guardian and the Affidavit of Eligibility and Release must be signed by the parent or legal guardian. Except where prohibited by law, winners consent to the use of their names, hometowns, likenesses and photographs for advertising and publicity without additional compensation.

Sweepstakes is open to legal residents of the U.S., Canada and Europe (in those areas where made available) who have received the offer. In the event that the designated recipient of the offer has moved, the offer may not be valid in the state, country or province to which the offer has been forwarded. Void in Puerto Rico and where prohibited by law. All federal, state, provincial and local laws and regulations apply.

All prize values are in U.S. currency. No transfer of prize permitted. A winner is responsible for all taxes on his/her prize.

Canadian residents, in order to win, must first correctly answer a time-limited skill testing question administered by mail. Any litigation regarding the conduct and awarding of a prize in this publicity contest by a resident of the province of Quebec may be submitted to the Regie des alcools, des courses et des jeux.

Sweepstakes may be presented in different creative presentations by different organizations. Ventura Associates, Inc., 1040 Avenue of the Americas, New York, NY 10018, the independent judging organization has provided all prizes at no charge. Ventura Associates, Inc., reserves the right to withdraw the promotion if it becomes technically corrupted. Employees of Sweepstakes Administrator, presenting organizations, their advertising agencies and promotional companies involved in this promotion and their families, agents, successors and assignees are ineligible to participate in the promotion and shall not be eligible for any prizes covered herein. The parties hereto acknowledge that SCA is not liable for any prize awards payable to promotion participants in violation of this term.

COMPUTERWORLD TECHNOLOGY WEEKLY SWEEPSTAKES OFFICIAL RULES: No purchase necessary. Complete official entry form or print all entry information on plain paper, including this week's prize and fax to: (800)898-2299. Incomplete entries not eligible. Sweepstakes begins 12:01 am (EST) Monday (the date of the issue). All entries must arrive by fax no later than 11:59 am Monday of the following week. The issue date can be found at the top of most pages of this magazine. Sponsor not responsible for telephone or fax equipment failure or delayed transmission. All entries become sponsor's property & will not be returned.

Winner will be determined in a random drawing on or about 5:00 pm (EST) the Monday following the issue date. You need not be present to win. The prize (and its retail value) detailed with the entry form is guaranteed to be awarded & delivered to winner approx. 30 days from drawing date. If notification letter or prize is returned as undeliverable, it will be awarded to an alternate winner at random. No prize substitutions except due to unavailability, in which case a prize of equal value will be awarded. Prize not transferable or redeemable for cash. All taxes on prize are winner's responsibility. Acceptance of prize constitutes permission (except where prohibited) to use winner's name, hometown & likeness for promotional purposes without additional compensation.

Sweepstakes is open to legal US residents, 18 & older. Odds of winning determined by total number of entries received. Est. distribution: 150,448. Sponsor: Computerworld, Inc. 500 Old Connecticut Path, Framingham, MA 01701. Employees of Computerworld, Inc., its affiliates, subsidiaries, retailers, advertising & promotion agencies & immediate families of each not eligible. All federal, state & local laws & regulations apply. Void in Puerto Rico & where prohibited by law.

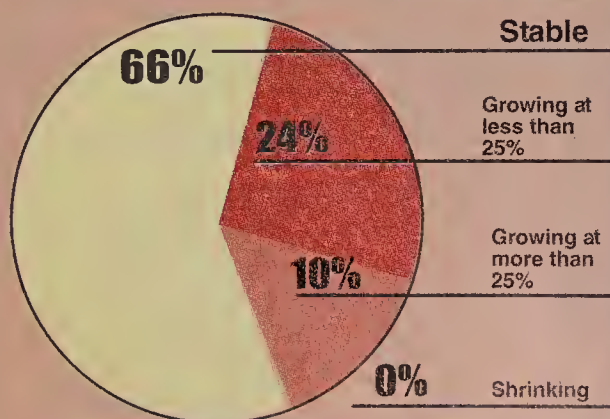
For winners list (available within 4 weeks of the drawing), send a SASE to: Sweepstakes Winners, Computerworld TechnoToys Sweepstakes, 500 Old Connecticut Path, Framingham, MA 01701.

Career Survey: Project Management Software

Industry Hiring Trends

Overall growth rate

7.4%

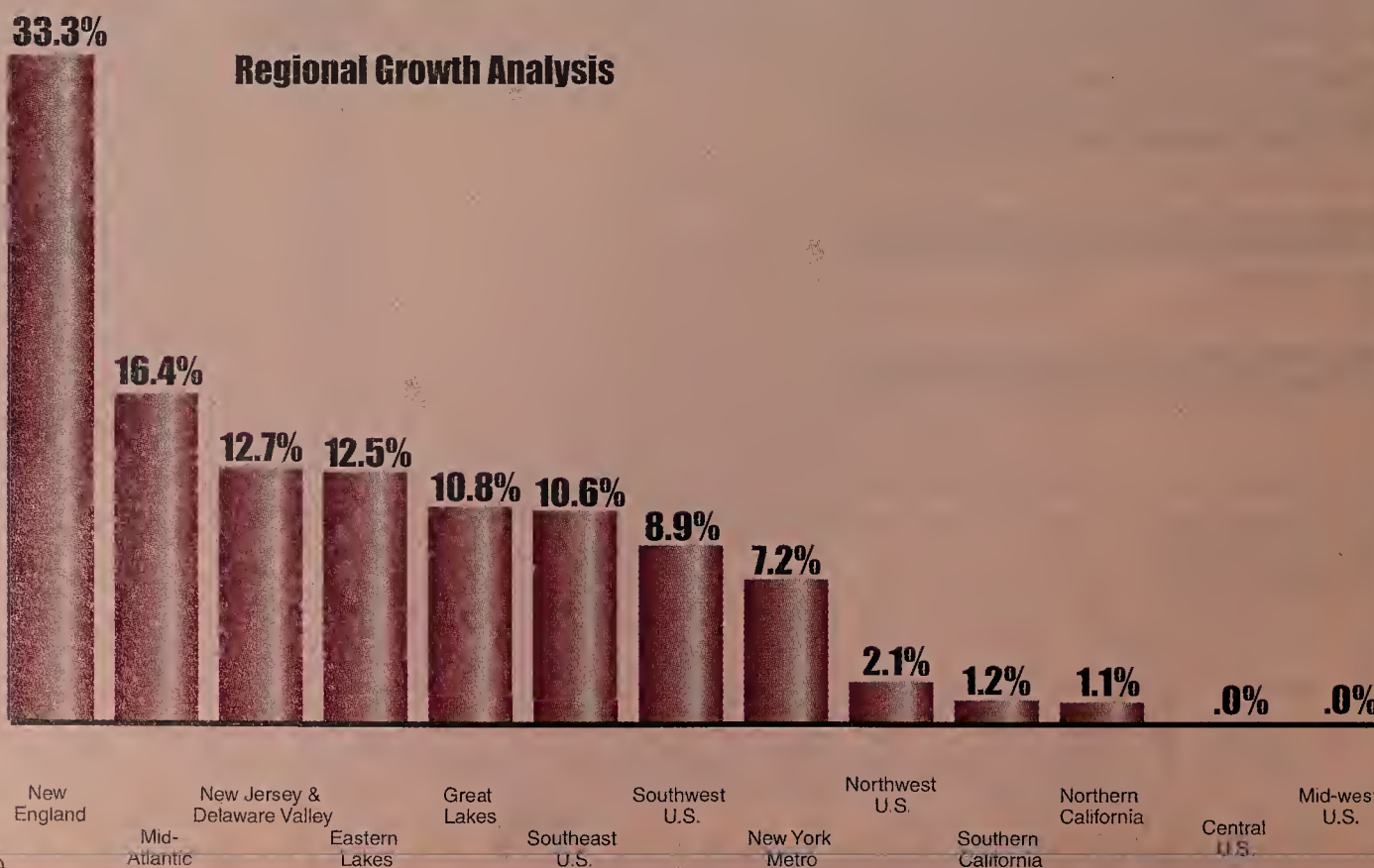


Survey Base: 50 Technology Firms involved in Project Management Software

Survey conducted between July '96 and June '97;

CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000 technology manufacturers. This survey relates to the 31,042 tracked firms with fewer than 1,000 employees.

Regional Growth Analysis



...or create a few programs of your own. The possibilities are endless with the nation's leader in promoting open competition in the utility industry.

Here's your chance to get with our programs.

Data Base Administrator

Duties: Design, implement and monitor DB2 databases and related objects.

Requirements/Skills: Thorough knowledge of DB2, MVS, JCL, systems analysis and design ... broad knowledge of database management theory ... general knowledge of on-line computer communications/hardware/operations. Knowledge of Platinum DB2 tools, Install/1 & Design/1 desirable.

Programmer/Analyst

Duties: Analyze/program business functional requirements and design automated solutions ... provide troubleshooting skills ... and support production environment.

Requirements/Skills: Thorough knowledge of COBOL and database concepts.

Systems Programmer

Duties: Work in IBM 2003 126, OS390 environment.

Requirements/Skills: Experience installing software with SMP/E, SMS, TCP/IP, CICS, DB2 and VTAM experience desirable.

Other positions also available. All positions require two-year or four-year degree in computer science or equivalent work experience and training. Competitive salary structure ... comprehensive benefit package ... work environment receptive to new ideas.



Please mail resumé and salary history to:
CILCO Employment Administrator
300 Liberty St. Peoria IL 61602
e-mail: HR@cilco.com



An equal opportunity employer.

OPEN YOUR NETWORK TO EXCELLENCE.

COMPUTER PROFESSIONALS WANTED. Multiple Openings for all positions. All positions, unless otherwise stated, require two years experience in the job duties specified and, depending on the position, a Bachelors or a Masters degree in Computer Science, Computer Engineering, Electrical Engineering, Electronic Engineering, Computer Information Systems, Mathematics or the foreign equivalent. All positions are 40hrs/wk, 8am-5pm, M-F.

REF. 24 Oracle database administration and datamodelling using ERWIN. This Database Administrator position requires a Masters and 2 years experience. \$48,480/yr.

REF. 25 Analysis, design and development of applications using COBOL and a relational database management system. This Programmer Analyst position requires a Bachelors degree and 2 years experience. \$51,400/yr.

REF. 26 Designing and developing applications using C on OS/2. This Programmer Analyst position requires a Bachelors and 2 years experience. \$53,560/yr.

REF. 27 Analysis, design and development and using Sybase and Powerbuilder. This Programmer Analyst position requires a Bachelors degree and 1 year experience. \$42,000/yr.

REF. 28 Consultancy in SAP R/3 software and implementation of ABAP/4 programs. This Software Engineering position requires a Masters and 2 years experience. \$90,000/yr.

REF. 29 Analysis, design, coding and testing of system and using DB2, CICS, COBOL II and Telon. This Programmer Analyst position requires a Bachelors and 2 years experience. \$46,900/yr.

REF. 30 Onsite coordination leading a team of programmers and application development and using DB2, CICS, COBOL, VSAM and IMS DB/DC. This Lead Programmer Analyst position requires a Bachelors and 2 years experience. \$61,000/yr.

REF. 31 Analysis, design and development of applications using an application development language. This Programmer Analyst position requires a Masters, no experience required. \$39,000/yr.

MUST submit one original resume for each job applied and MUST include job reference number(s). Respond to: Kim Pocock, (Insert Ref #), Syntel, Inc., 2800 Livernois, Suite 400, Troy, MI 48063. Fax: (248) 619-2894. EOE.

SYNTEL

SOFTWARE ENGINEER: The Software Engineer develops and maintains software programs and provides technical and analytical support for the company's products and services. This includes systems that interface with the company's ACE unit. The system software development are in Windows 3.1, Windows 95, NT and DOS environment. A significant portion of this individual's time is spent developing software and assisting external developers with specifications for the company's interface. Develop and maintain software programs and provide technical support in a structured manner. Communicate with other personnel and external customers in order to effectively and efficiently deliver software and system solutions. Record and maintain information related to system development, documentation, and account management. Knowledge of C++ programming languages, Windows NT, Windows 95, 3.1, MS-DOS, ASYNC Communications. B.S. in Computer Science plus one year of experience in job. 40 hrs/wk., \$30,000/yr. Must have proof of legal authority to work in the United States. Send your resume to Bernard Childerston, Nebraska Department of Labor, P.O. Box 94600, Lincoln, Nebraska, 68509. Refer to Job Order NE 0191747. This advertisement is paid for by the employer.

Systems Consultant, 40 hrs/wk, 8am-5pm, \$45,000/yr. Analyze, design, develop, implement & maintain healthcare business applications. Work with IBM mainframe & client/server platforms utilizing mainframe FOCUS/PC FOCUS, TERADATA RDMS, TSO/SPF, JCL & SQL. Interact with client & in-house developers for clarification & other issues. Associate's Degree in Applied Science or Computer Science as well as 3 yrs in job offered or as Programmer/Analyst required. Previous 3 yrs exp must include work with FOCUS on mainframe & PC platforms, TERADATA, JCL, TSO/SPF & SQL for healthcare business systems. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Brenda Kelly, Reference #V-IL-17409-K. NO CALLS. An Employer Paid Ad.

Data Base Administrator sought to be responsible for maintaining the integrity of the Oracle Database on accounts he/she is assigned. This includes both proactive database tuning and maintenance, as well as reactive trouble-shooting. Responsible for identifying and communicating problem trends, suggestions for their resolution, and for communicating suggestions for the improvement of the applications database which he/she supports. Requirements: Bachelors Degree in Computer Science, Engineering or Math. Two years experience as an Oracle Database Administrator and/or two years as a Database Administrator. Such experience must include 2 years experience in Oracle DBA. Applicant must be willing to travel to various client sites throughout the U.S. Send 2 copies of resume to: Case #70352, P.O. Box #8966, Boston, MA 02114.

Programmer Analyst - (10 Openings) Job Ord. Num. 6012957. Planning, developing, testing, and documenting comp. progs; using UNISYS A Series machines and using COBOL, LINC, COMS, DMSII. Reqs: 1 yr. exp. in the job offered, and a Bach. in Comp. Sci., Systems Anal., Comp. Info Syst., M.I.S., Info. Tech., Comp. Info. Tech., Comp. Applications, Comp., Electrical, or Electronic Engg., Comp. Sci. Engg., or Math or its foreign educ. equiv., or it's equiv. in educ. and exp. Will accept 3 yrs. of college educ. plus 3 years exp. in a related occupation which included 1 yr. exp. in the job offered, in lieu of the required educ. and exp. 40 hrs/wk, 8a-5p, M-F, \$52,000/yr. Send resume along with the Job Ord. Num. to: Mr. Clement Pizzutelli, Manager, Office of Employment Security, 1051 Morell, Box 868, Connelville, PA 15425.

You can get there from here.

You don't have to live on the high plains to share the pioneer spirit. More than a century ago, pioneers ventured to North Dakota, seeking a new way of life. But today, whether you want to work in Fargo, Boston, Seattle, London or Sydney—just to name a few—Great Plains Software challenges you to seek a new frontier—in technology. We have **hundreds of career opportunities globally** in over 200 hundred cities worldwide in our virtual organization.

Do you have what it takes to lead our company to a new frontier in technology? As the leader in Windows NT client/server financial management solutions, we are seeking forward-thinking pioneers in the following positions:

- Product Consultants
- Sales Executives
- System Integrators/Implementors
- Software Engineers
- Project Managers
- Support Engineers

"At Great Plains Software, what I do really moves our business ahead—and I love it."

Ralph Mehnert-Meland, International Business
Great Plains Software

For immediate consideration, please forward your resume and desired position to the address below. When you apply, your resume will be made available to our Virtual Organization:



GREAT PLAINS SOFTWARE

Attn-Recruiting-CW
1701 38th Street SW, Fargo, ND 58103, USA
fax: 701-281-6665
e-mail: apply@gps.com



DATABASE EXPERTS

Relocating or desire more challenge?
Our focus is D.B. Technology
We list outstanding, permanent positions across the U.S.A. Relo & Fees Paid

Sr. DB Expert to \$90k+ bonus

Dynamic, multi-natl corp
Will lead corp database planning
Requires exp in multiple RDBMS

DBA/Tech Support to \$80k

Strong performance tuning
Will support large databases

S/W Development to \$80+stock

C/C++/database development
skills for hi tech software vendors

DB Specialists \$60-120+

Host of opportunities for database
& C/S project mgr's/developers.

Large & small companies,
many industries

HAMILTON

TECHNICAL PERSONNEL, INC.

P.O. Box 369 West Hurley, NY 12491

914-679-4050 Fax: 914-679-5704

cwad@hamiltontech.com

http://www.hamiltontech.com

Software Engineer sought to analyze, design, develop and implement application architecture in a client-server environment. Perform network configuration and network administration. Provide technical support to end users. Serve as technical team leader and/or project manager. Utilize: Oracle, Case tool technology and C/UNIX. Requirements: Bachelors Degree in Computer Science, Math or Engineering. Five years experience as a Software Engineer and/or five years in Software development in a client/server environment. Such experience must include: Oracle, C/UNIX, Case tool technology, and work as a team leader or project manager. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago IL 60605, Attention: Shella Lindsey, Reference #: V-IL 16751-L and employer paid ad. No calls.

Find training now.

careeragent.computerworld.com



Integrated Systems Professionals
A Fast-Growing National Consultancy Offers Exciting Opportunities For Top Quality Professionals.

**Project Managers
Team Leaders/Consultants**

- Long-Term Career Opportunities
- Short-Term And Long-Term Contract Opportunities

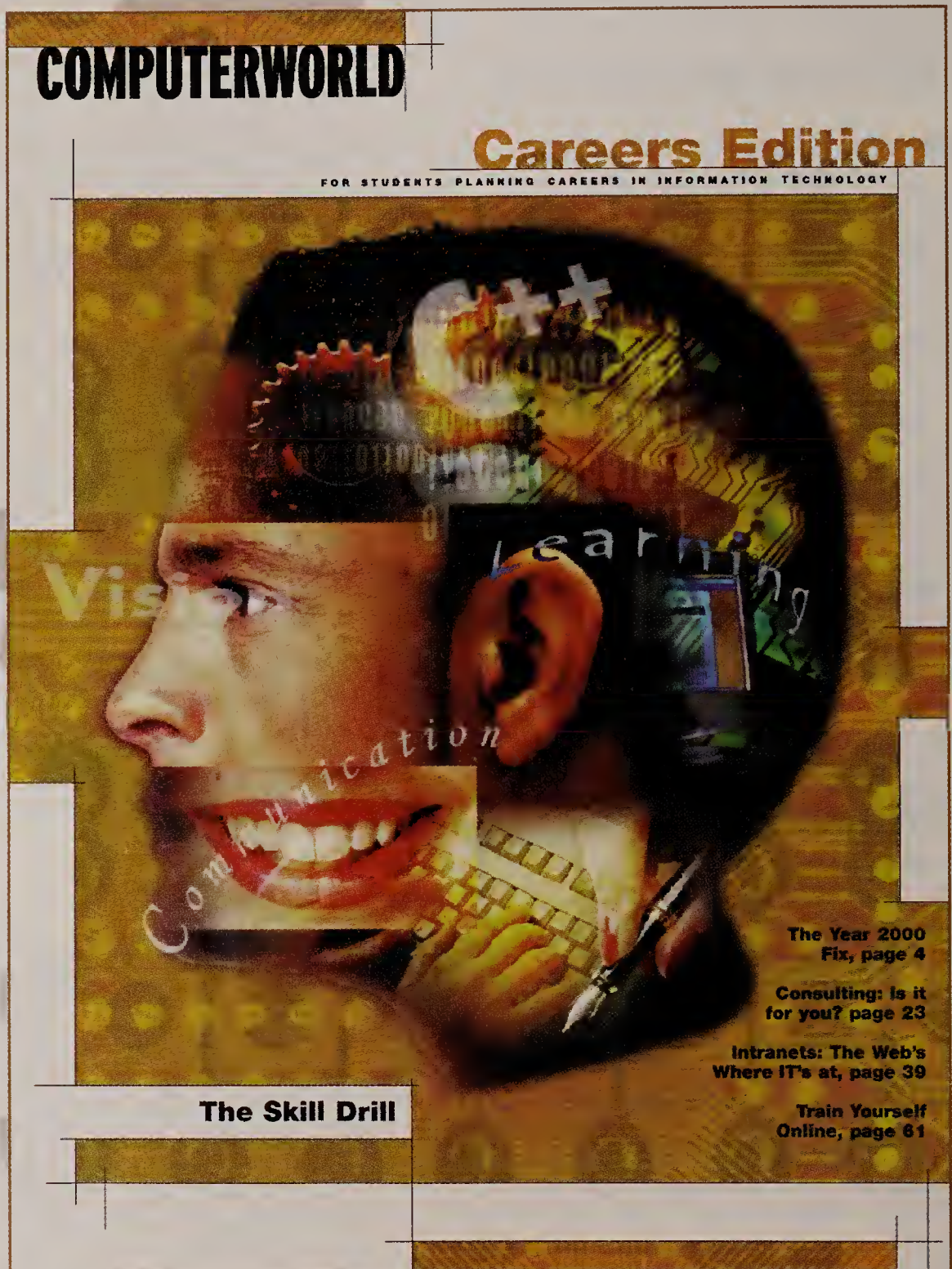
Experience in all SAP R/3 Modules Basis and ABAP
Oracle • PeopleSoft • Baan

Performance-Based Compensation provides exciting opportunities for experienced professionals. (To \$250K OR \$150 per hour for experienced SAP experts)

Please fax resumes to 516-625-0740
or visit us at http://www.iprr.com

IPR INC.

Fall Campus Edition



Fall Campus Edition

Issue: October 31, 1997
Advertising Deadline: September 17, 1997

1-800-343-6474, x8000

Marketplace

NEW & NOTABLE

For information
advertising,
call 203-857-5000

Champion Announces Breakthrough In Autoloading of CD-Rs

On May 19, at the SIGCAT trade show in Virginia, Champion Duplicators, Inc. responds to the growing demand of CD-R duplication in announcing a new tray based duplication system-the Stellar². Champion's industry experience is evident in the creation of this product and it is expected that the Stellar² will be the new standard in the duplication technology.

"We realize that the demand for something more efficient in CD-R duplication was rising, so we set out on mission to

achieve four things: affordability, simple operation, reliability, and scalability." President and CEO David Wolfer said of the Stellar² project. "We've achieved all of these things and best of all, we did it ingeniously." Unique in concept, unprecedented in its disk loading mechanism, and unparalleled in features, the Stellar² utilizes a "turn-table" concept-quickly and accurately moving the discs without causing noise and vibration to the writers. The machine is reliable with few moving parts and a "clean", perfected

design for long-term performance reliability.

The demand for CD-R duplication is not a new one, but as demand increases, expectations also double. Before the Stellar² was created, duplicating CD-Rs required expensive jukebox or time-consuming caddy-tested systems. These machines are reliable, however, there is a new standard of efficiency, innovation and affordability brought together in the Stellar². The Stellar² will be available in stand-alone or PC hosted systems.

Although pricing has not yet been released, it is estimated to be in the range of \$6,000 to \$7,000- an affordable price for advanced innovation. Champion is currently appointing distributors for the Stellar² product line. Contact Champion for full details at Champion Duplicators Inc. 2305 South Vasco Road, Livermore, CA 94550. Phone: (510) 373-6060 or (888) 723-3475. Fax: (510) 373-8160, or E-mail: customercare@www.championsms.com, or <http://www.championsms.com>.

TAC Systems' FAXfree software enables users to send color faxes over the Internet for little or no cost

TAC Systems, Inc. announced the addition of color capabilities to their FAXfree software. FAXfree enables Internet users to send color faxes anywhere in the world at little or no cost. Developed for Windows 95, "FAXfree on the Internet" offers the convenience of conventional fax systems without the associated long-distance phone charges. FAXfree transmits scanned color images

and photographs, charts, and other traditional facsimile information to Internet e-mail addresses. FAXfree at a one time \$49.95 expense, costs less than long-distance fees charged for sending just a few international faxes. A black-and-white version of FAXfree Personal is available for \$29.95. A powerful server version which enables multiple users to send faxes over company networks will be

released this summer. TAC Systems also offers FAXfree Portal. Available for \$1,295 FAXfree Portal connects fax machines to the internet. TAC Systems, Inc., based in Huntsville, Alabama, was founded in 1991. The company specializes in solutions for leveraging information and communications in computer networks. TAC Systems' product line includes data storage peripherals and

software that optimizes network information access, retrieval, and transmission. Contact: Candice Dunaway TAC Systems, Inc. at (205) 721-1976, or e-mail cdunaway@tacsystems.com, or www.tacsystems.com



TECHNO

TOYS

WIN EVERY WEEK!

Computerworld Marketplace TechnoToys Sweepstakes

Aug. 4 TechnoToy:

Olympus D-200L Digital Camera

Lightweight compact design stores 20 high quality or 80 normal pictures. For use with Macintosh or Windows.



By entering into the weekly TechnoToys giveaway, your name will automatically be entered into the year-end Super Prize Sweepstakes where you could win as much as **\$25,000 IN CASH!**



COMPUTERWORLD
The Newsweekly for Information Technology Leaders

Fax this completed form, or all of the following information to: (800) 898-2299.

Yes, I want to enter to win an Olympus D-200L Digital Camera. Please also enter me in the end-of-year 1997 Super Prize Sweepstakes Drawing.

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

Fax: _____

email: _____

Are you currently a Computerworld subscriber?

yes _____ no _____

Issue Date: 8/4/97

No purchase necessary. All entries must be received no later than 11:59 am (EST) Mon., Aug. 11, 1997. Winner will be determined in a random drawing on or about 5:00 pm (EST) Mon., Aug. 11. See official rules within the Marketplace section.

Out-of-Box Experience

It's a philosophy — just plug in your GATEWAY™ PC and go to work. PCs custom built to your specifications, shipped directly from the manufacturer help increase your end-users' productivity. That's what we mean by enhancing your "out-of-box" experience. It's part of Gateway 2000 Major Accounts, Inc.'s Custom Integration Services (CIS).

With CIS, a host of hardware and software applications can be custom built into your PCs, even components other than Gateway's standard offering. You can get that hardware or software pre-tested and shipped directly to your door — no third parties, no wasting your technician's time installing software or making alterations after your PCs are built. Plus, you benefit from toll-free, dedicated technical support and customized service options.

Gateway products deliver Value of Ownership by combining maximized benefits and reduced costs over the life cycle of your PCs. "Value" is much more than the cost of the product; it's the right balance of quality, performance, manageability, service *and* life cycle cost.

Call our Gateway Major Accounts representatives today and let them elevate *your* out-of-box experience.



8 8 8 - 8 8 8 - 0 3 8 2

www.gateway.com/majoract/majoract.htm

Gateway 2000 Major Accounts, Inc.

©1997 Gateway 2000, Inc. GATEWAY 2000, "G" logo, black-and-white spot design and "You've got a friend in the business" slogan are registered trademarks, and GATEWAY is a trademark of Gateway 2000, Inc. All other brands and product names are trademarks or registered trademarks of their respective companies. Gateway 2000 Major Accounts, Inc. is a wholly owned subsidiary of Gateway 2000, Inc.

Marketplace

For information
advertising
call 203-857-5100

Distinct IntraNet Servers™

The Easiest Way to Manage Users and Network Resources



Configure NFS Server

Groups Users Exports General

User Name: Slim
User Password: [blank]
User ID: 7
Group Name: TechSupport

Sec Group Name ID
QA 2
Sales 1
TechSupport 3

User Name	User ID	Group Name	Group ID
Cully	5	Sales	1
Dick	2	QA	2
Harry	3	QA	2
Larry	4	Sales	1
Moe	5	Sales	1
Pickings	8	TechSupport	3
Tom	7	TechSupport	3
Tom	1	QA	2

Buttons: Add, Remove, Modify, OK, Cancel, Apply

Highlights:

- Includes all major TCP/IP based file and printer servers in a single package: NFS Server, FTP Server, LPD, TFTP and BOOTP.
- Integrates seamlessly into Windows 95 and Windows NT
- Password protected login for all servers
- Also available for Windows 3.1.

Free
Evaluation Copy
Available at...



distinct
The world leader in Internet development tools.

<http://www.distinct.com>
sales@distinct.com
Phone: 1-408-366-8933
Fax: 1-408-366-0153

Distinct is a registered trademark and Distinct IntraNet Servers is trademark of the Distinct Corporation. Copyright 1997 Distinct Corporation, 12900 Saratoga Avenue, Saratoga, CA 95070. All rights reserved. Specifications and terms are subject to change without notice.

Distinct IntelliTerm™

Integrated Terminal Emulator for DEC and IBM® Systems



Keyboard Profile: Default

Buttons: Esc, F1-F12, Tab, Caps, Enter, Ctrl, Alt, Shift, Space, Del, End, Home, Up, Down, Left, Right, F1-F12, Del, End, Home, Up, Down, Left, Right

Current Key: Escape
Escape: Not assigned
Ctrl: Not assigned
Ctrl-Shift: Not assigned

Select Function Type
System Commands
Function: Close-Session, Close-Window, Dead Key, FILLAPI, F escape, F up, F down, F left, F right

Buttons: Default, Clear Entry, Set, List Assigned Functions, Reset All

Buttons: OK, Cancel, Load, Help

Highlights:

- TN3270 Emulation—Models 2,3,4 and 5 (for IBM Mainframes)
- 3179G Vector Graphics & 3279S3G
- TN5250 (24x80, 27x132) (for AS/400)
- VT52, VT100, VT220, VT320 & VT420 emulation (for DEC and UNIX Systems)
- Customizable keyboard layouts, poppads and session profiles
- VBA™ Advanced Scripting Language
- DDE, HLLAPI, EHLLAPI, WinHLLAPI and Visual Basic™
- Available for Windows 3.11, Windows 95 and Windows NT

Free
Evaluation Copy
Available at...



distinct
The world leader in Internet development tools.

408.366.8933
<http://www.distinct.com>
Fax: 408.366.0153
E-mail: cworld@distinct.com
Fastfacts: 408.366.2101

Distinct is a registered trademark and Distinct IntelliTerm is trademark of the Distinct Corporation. Copyright 1997 Distinct Corporation, 12900 Saratoga Avenue, Saratoga, CA 95070. All rights reserved. Specifications and terms are subject to change without notice.

NetCom 3™ Connectivity Without Clutter.



Winner



DESIGNED FOR
COMPUTER EQUIPMENT
AND ACCESSORIES,
NETCOM3 IS BUILT
TO MAXIMIZE
WORKSPACE AND
IMPROVE OPERATOR
PRODUCTIVITY.



CORPORATE HEADQUARTERS
2550 WEST MIDWAY BLVD.,
BROOMFIELD, COLORADO 80020
TEL: 303/465-2800
SALES LINE: 800/4321-EDP
SALES FAX: 800/EDP-3490

A product of

edp
engineered
data products
INCORPORATED

Linking People and Technology.

EDP EUROPE LTD.
43 RECHILLS ROAD,
SOUTH WOODHAM FERRERS,
CHELMSFORD, ESSEX CM35UL
TEL: (44) 1245-322380
FAX: (44) 1245-323484

WEB SITE: WWW.EDP-USA.COM

STOP COMPUTER THEFT!

IN THE OFFICE — ON THE ROAD

- Secure computer or notebook to desk, table, etc.
- Protect data
- Lifetime warranty

Kābliit™ II - List \$34.95



Fixed Location

Kābliit™ T-Lock - List \$39.95



Any Location

Quick And Easy To Install
Available For Macintosh Too

Secure-It

Order now — Call 800-451-7592...

18 Maple Court, East Langmeadow, MA 01028 USA phone 413-525-7039
FAX: 413-525-8807 EMAIL: secure-it@awls.com INTERNET: <http://www.secure-it.com>
Hours: 8:30 a.m. to 8:00 p.m. EST

The particular Master™ Lock Trademarks used are trademarks of the Master Lock Company and are used by Secure-It, Inc. under license.

Padlock Security
Provided by
Master Lock



ADVERTISERS INDEX

Acer America 62-63 http://www.acer.com	Interex 64/65+
Advanced Logic Research 46 http://www.alr.com	International Data Corp. 20
AIM Technology 10	Lawson Software 30-31 http://www.lawson.com (800) 477-1357
American Power Conversion 48/49 http://www.apcc.com (888) 289-APCC	Logic Works 17 http://www.logicworks.com
ANS Communications 69 http://www.ans.net	Micro Focus 9 http://www.microfocus.com (800) 872-6265
Candle 38-39 http://www.candle.com	Micron 37 http://www.micron.com
Compaq Computer Corp. 34-35, 58-59 http://www.compaq.com	Microsoft 52-53 http://www.microsoft.com
Computer Associates 22-23 http://www.cai.com	NEC Technologies 26-27 http://www.nec.com
EMC Corp. 40 http://www.emc.com	Oracle Corp. 7, 11 http://www.oracle.com
Gartner Group 76	Peoplesoft 21 http://www.peoplesoft.com (800) 947-7753
Hewlett-Packard 13, 60 http://www.hp.com	Procom Technology 51 http://www.procom.com
Hitachi PC 67 http://www.hitachipc.com	SAS Institute 25, C4 http://www.sas.com
IBM 54, 72A-72C*, C3 http://www.ibm.com	Syncsort 5 http://www.syncsort.com
ICE 56	Tandem 18-19 http://www.tandem.com
Imation 74 http://www.imation.com	Tech Corps 72D*
Information Builders 43, 45 http://www.ibi.com	

*Var/Integrator/Consultant Select Edition
+Regional Insert

To have your Internet address listed here, please contact Paula Wright at (508) 620-7716
This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast.
Please write to:

COMPUTERWORLD, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here Address shown: ☐ Home ☐ Business

Name		
Company		
Address		
City	State	Zip

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: 1-800-552-4431 Outside U.S. call (614) 382-3322. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address - COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701.

COMPUTERWORLD, INC.

President Michael R. Rogers	Senior Vice President/ Finance Matthew C. Smith	Vice President/ Human Resources Susan C. Perry	Executive Assistant to the President Laureen Austermann
--------------------------------	---	--	---

COMPUTERWORLD

An IDG Company: The World's Leader in Information Services on Information Technology

Senior Vice President/Publisher

Peter C. Weedfald

Executive Assistant to Publisher

Dawn MacDowell

Computerworld Headquarters: 500 Old Connecticut Path, P.O. Box 9171, Framingham, MA 01701-9171

Phone: 508-879-0700, FAX: 508-875-4394

Editor Paul Gillin	Senior Vice President Consumer Marketing Gail Odeneal	Vice President Marketing Cynthia L. Ahart	Vice President Custom Publications Elaine R. Offenbach
Northeast Regional Vice President Sherry Driscoll	New York/New Jersey Regional Manager Christopher E. Thomas	South Atlantic Regional Vice President Bernie Hockswender	Western Region Vice President, Associate Publisher William P. Howard
			National Director, Business Development John S. Gordon

MARKETING: Director, Marketing Communications/Mary Doyle, Senior Manager, Marketing Communications/Elizabeth Phillips, Manager, Trade Show & Events/Audrey Abbott, Marketing Manager/Susan Thaxter, Marketing Communications Project Manager/Karen Lesko, Senior Marketing Manager/Stuart C. Dale, Marketing Specialist/Emily Dinneen, Administrative Assistant/Patty White **CIRCULATION:** Vice President Circulation/Maureen Burke **PRODUCTION:** Production Director/Christopher P. Cuoco, Production Manager/Beverly Wolff **SALES PROFESSIONAL DEVELOPMENT:** Operations Director/Cynthia Delany **DISTRIBUTION:** Distribution Manager/Bob Wescott, Traffic Manager/Pat Walker **INFORMATION SYSTEMS:** Vice-President of IS/Walter Crosby

SALES OFFICES

Computerworld Headquarters: 500 Old Connecticut Path, P.O. Box 9171 Framingham, MA 01701-9171

Phone: 508-879-0700, FAX: 508-879-0446

NORTHEAST

Director: Isabelle Kane, District Managers: Kim DiMascio, Laurie Marinone, Sales Office Coordinator: Tammy Boisvert, Sales Associates: Karen Beasley, Dianne McNeil, Cheryl Stratton, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (508) 879-0700 FAX: (617) 890-2669 Hearing Impaired: (800) 428-8244

NEW YORK & NEW JERSEY

Director: Fred LoSapio, Senior District Manager: Barry Cheney, Senior Account Executive: John Bosso, Sales & Office Associate: Susan Kusnic, Sales Associates: Jean Dellarobba, Valerie Luszczek, John Radzinski, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 FAX: (201) 587-9255, (201) 587-1289 Hearing Impaired: (800) 208-0288

SOUTH-ATLANTIC

Sales Administrator: Jennifer Pattenau, 1565 Woodington Circle, Suite 201, Lawrenceville, GA 30044 (770) 931-8104 FAX: (770) 931-8106 Hearing Impaired: (800) 449-4974, Senior District Manager: Mike Bachman, Sales Associate: Mary Cavaliere, 175 Strafford Ave. #1, Wayne, PA 19087, (610) 975-4581 FAX: (610) 975-4582 Phillip Braithwaite, Account Executive, 2457A S. Hiawasse Rd., Ste. 321, Orlando, FL 32835 (407) 521-9181 FAX: (407) 521-8719

MIDWEST

Senior District Manager: Sharon R. O'Brien, Sr. Account Executive: Laurie Gomes, Sales Associate: Jasmine Huffman, 875 N. Michigan Avenue, Suite 2846, Chicago, IL 60611 (312) 943-4266 FAX: (312) 943-2214

SOUTHWEST

Senior District Manager: Jennifer Hedges, Sales Associate: Brenda Shipman, 14651 Dallas Parkway, Suite 304, Dallas, TX 75240 (972) 233-0882 FAX: (972) 701-9008 Hearing Impaired: (800) 822-4918

CUSTOM PUBLICATIONS

Boston: Director of Publishing Services/Carolyn Medeiros, Project Coordinator/Heidi Broadley, Managing Editor/Peter Bchner, Graphic Designer/Gail Varney, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 875-6310

San Francisco: Vice President Custom Publications/Elaine R. Offenbach, Sales Operations Coordinator/Nikki Wilson, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312

MARKETPLACE ADVERTISING

Sales Manager/Pat Fales, 50 Washington St., South Norwalk, CT 06854 (203) 857-5125 FAX: (203) 838-1425

COMPUTERWORLD INFORMATION MANAGEMENT DIVISION

Vice President/General Manager: Richard Mikita

Computerworld VAR Database: Carol Mullen/ National Sales Manager, Account Executive/Sean Weglage, (508) 879-0700 FAX: (508) 879-0184

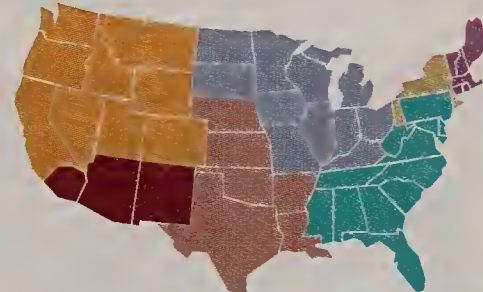
Computerworld Buyers Database East: Regional Manager, Database Services/Linda Clinton, (508) 879-0700 FAX: (508) 879-0184

Computerworld Buyers Database West: Regional Manager, Todd Herrold, (415) 347-0555 FAX (415) 347-8312

DIRECT RESPONSE CARDS

500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

National Accounts Director/Norma Tamburrino, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090



NORTHERN CALIFORNIA

Directors: Christine Curry, Linda Holbrook-Dusay, Senior District Manager: Ernie Chamberlain, District Managers: Gena Haas, Denyce Kehoe, Holly Nissalke, HR Representative: Leticia Lehane, Sr. Account Executives: Claude Garbarino, Account Executives: Shannon Dempsey, Larisa Gaganis, Andrea Zurek, Sales Associates: Alicia Giovannini, Heather Hackman, Emmie Hung, Office Services: Jessica Abude, Sales Coordinator: Yvonne Zuniga, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312 Hearing Impaired: (800) 900-3179

SOUTHERN CALIFORNIA

Director: Nancy Coy-Bianchi, Sr. Account Executive: Susan Davis, Sales Associate: Pat Duhl, 2171 Campus Drive, Suite 100, Irvine, CA 92612 (714) 250-3942 FAX: (714) 476-8724

ADVERTISING OPERATIONS

Display Advertising Production Manager: Paula Wright, Display Advertising Coordinators: Lisa Tanner, Gregg Pinsky, (508)-879-0700 FAX: (508) 879-0446

RECRUITMENT ADVERTISING SALES OFFICES

Vice President/Recruitment Advertising/John Corrigan, Marketing Director/Derek E. Hulitzky, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

New England & Upstate New York: Regional Manager/Nancy Percival, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (800) 343-6474, Account Executive/Nancy Mack, (800) 343-6474

Mid-Atlantic: Regional Manager/Jay Savell, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474, Sr. Account Executive/Caryn Dlott, (800) 343-6474 TDD: (800) 208-0288

South-Atlantic: Regional Manager/Katie Kress-Tablett, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 573-4115, Sales Manager/Pauline Smith (800) 343-6474

Midwest: Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Account Executive/Nick Burke (800) 343-6474 TDD: (800) 227-9437

Southwest: Regional Manager/Ellen Cross, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Account Executive/Jim Parker, (800) 343-6474

Northwest: Regional Manager/Christopher Glenn, 246 Casitas Ave., San Francisco, CA 94127 (415) 665-2443, Account Executive/Fabiola Franz, (800) 343-6474

West: Regional Manager/Ellen Cross, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Account Executive/Jeff Yoke (800) 343-6474 TDD: (800) 203-5867

Internet Careers Site: Jennifer Arispe, Sales Associate, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

ALLIANCE MARKETING

Director/Elizabeth Cooper, Sales Associate/Nancy Dillon, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312

INTERNATIONAL DATA GROUP

Chairman of the Board, Patrick J. McGovern

President, Kelly Conlin

Chief Operating Officer, Jim Casella



Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 275 computer publications in over 75 countries. Sixty million people read one or more International Data Group publications each month.

The Week in Stocks

Gainers



Losers



PERCENT

Egghead Discount Software	29.9
Chips and Technologies	28.4
American Software Inc.	25.4
Learning Co. (The)	23.7
Logic Works	22.0
Cyrix	19.5
Intergraph Corp.	18.3
Radius Inc.	18.2

Comshare Inc.	-22.8
Pinnacle Micro Inc.	-22.2
Banyan Systems Inc.	-17.9
Edify Corp.	-15.9
Creative Technology Ltd. (H)	-14.9
Wang Laboratories Inc.	-12.2
Secure Computing Corp.	-10.9
MathSoft	-10.3

DOLLAR

Yahoo! Inc. (H)	7.75
America On-Line	4.88
Stratus Computer Inc.	4.56
Micron Technology	4.19
Cyrix	4.13
Lattice Semiconductor	4.13
Ascend Communications	3.88
Chips and Technologies	3.75

Shared Medical Systems	-5.75
Creative Technology Ltd. (H)	-3.50
Wang Laboratories Inc.	-2.75
Edify Corp.	-2.63
Comshare Inc.	-2.56
3 COM Corp.	-2.31
IBM (H)	-2.19
Keane Inc.	-2.19

INDUSTRY ALMANAC

Premenos profitable in Q2

Premenos Technology Corp. (NASDAQ: PRMO), a small player among companies bringing electronic data interchange (EDI) to the Internet, this quarter turned a slight profit for the first time, joining larger players that are making money from this growing business, analysts say.

The Concord, Calif.-based company turned business around, earning \$526,000, or 4 cents per share, for the second quarter. That compares with a net loss of \$1.5 million for the same period last year.

The company's stock closed Thursday at 12 1/2 points.

Premenos makes Templar Electronic Data Interchange, EDI translation and mapping software. Larger players in the EDI field include Sterling Commerce, Inc. (NYSE: SE), which had its initial public offering 18 months ago, General Electric Information Services and IBM.

"I am still very bullish on the group," says Robert M. Johnson, senior vice president at ABN AMRO/Chicago Corp.

Overall, analysts estimate the market for EDI over the Internet will grow by 30% per year and increase from \$1 billion to \$2.5 billion by 2000.

"I think the growth rate of 25% to 30% minimum is definitely there for these companies," says Kama Krishna, an analyst at Laidlaw Equities in New York. "Now it's in the early growth stage." Sterling's service sales are growing almost 40% per year.

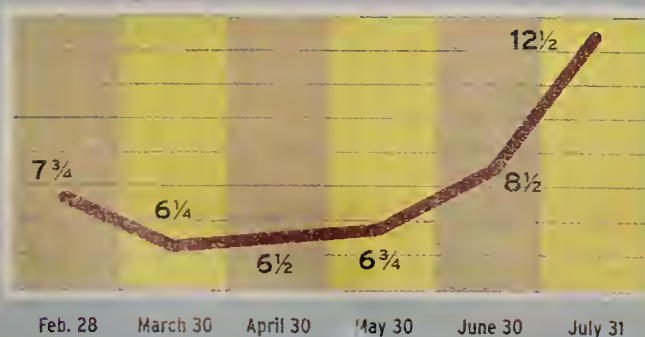
Although EDI has been around for about 25 years, use of private lines to provide the service often made it too expensive for small and midsize companies. With the rise in Internet use, the service is filtering below Fortune 500 companies.

"Now, with the Internet, you don't have to pay \$14,000 a month for leased lines," Krishna says. "Now, with \$500 a month, you can do electronic commerce with your supplier."

— Kim Girard

LOOKING UP

Analysts are bullish about the growth potential of Premenos' Internet-based EDI. That growth is helping the company's stock performance.



	EXCH	52-WEEK	RANGE	AUG. 1 2 PM	Wk Net CHANGE	Wk Pct CHANGE	EXCH	52-WEEK	RANGE	AUG. 1 2 PM	Wk Net CHANGE	Wk Pct CHANGE	
Communications and Network Services							OFF 0.00%						
COMS	81.38	24.00	3 COM CORP.	54.63	-2.31	-4.1	SOTA	18.25	8.88	STATE OF THE ART	12.38	-0.63	-4.8
AIT	71.75	49.63	AMERITECH CORP.	66.63	-0.44	-0.7	SSW	78.88	27.25	STERLING SOFTWARE INC.	33.81	-0.06	-0.2
ASND	80.25	36.13	ASCEND COMMUNICATIONS	53.50	3.88	7.8	SDRC	29.13	16.75	STRUCT. DYNAMICS RESEARCH	27.13	-0.38	-1.4
T	42.63	30.75	AT & T	36.50	0.75	2.1	SYBS	21.13	12.13	SYBASE INC.	14.69	0.00	0.0
BNYN	6.88	1.19	BANYAN SYSTEMS INC.	2.00	-0.44	-17.9	SYMC	24.50	8.75	SYMANTEC CORP. (H)	24.50	3.13	14.6
BAY	34.00	15.38	BAY NETWORKS INC.	30.50	-0.94	-3.0	SNPS	50.50	21.75	SYNOPSYS	33.69	2.13	6.7
BEL	78.25	55.13	BELL ATLANTIC CORP.	71.88	0.38	0.5	SSAX	14.22	3.88	SYSTEM SOFTWARE ASSOC.	8.69	-0.28	-3.1
BLS	48.69	35.25	BELLSOUTH CORP.	46.69	-0.25	-0.5	SYSE	36.50	7.38	SYSTEMSOFT CORP.	13.63	0.13	0.9
BRKT	42.25	9.25	BROOKTROUT TECHNOLOGY	10.50	-0.25	-2.3	TRUV	7.38	1.50	TRUEVISION CORP.	1.88	-0.13	-6.3
CS	46.50	27.50	CABLETRON SYSTEMS	34.25	0.94	2.8	VIEW	17.38	8.38	VIEWLOGIC SYSTEMS	14.75	-0.06	-0.4
CGRM	17.50	8.63	CENTIGRAM COMMUNICATIONS	12.13	0.38	3.2	VMRK	10.00	5.50	VMARK SOFTWARE INC.	9.13	0.50	5.8
CSCO	80.94	45.25	CISCO SYSTEMS INC.	78.94	-0.69	-0.9	WALK	16.25	10.38	WALKER INTERACTIVE SYSTEMS	14.69	-0.19	-1.3
CMNT	7.00	3.31	COMPUTER NETWORK TECH. (L)	3.75	-0.06	-1.6	WALL	29.13	12.25	WALL DATA INC.	17.75	0.06	0.4
DIGI	33.13	12.63	DSC COMMUNICATIONS	29.44	2.03	7.4	WANG	24.06	16.00	WANG LABORATORIES INC.	19.81	-2.75	-12.2
FORE	43.63	10.00	FORE SYSTEMS INC.	16.06	1.66	11.5	Internet						
GDC	12.50	6.13	GENERAL DATACOMM INDS.	6.88	-0.50	-6.8	OFF 0.84%						
GSX	53.00	36.13	GENERAL SIGNAL NETWORKS	49.13	-1.06	-2.1	AMZN	30.88	15.75	AMAZON.COM	27.75	1.00	3.7
GTE	49.38	37.75	GTE CORP.	45.94	0.19	0.4	AOL	74.88	22.38	AMERICA ON-LINE	69.69	4.88	7.5
LU	90.75	35.63	LUCENT TECH.	83.69	-0.94	-1.1	ATHM	25.50	16.63	AT HOME CORP.	19.50	-0.75	-3.7
MADGF	16.13	4.50	MADGE NETWORKS NV	6.06	-0.25	-4.0	BBN	29.38	15.13	BBN CORP.	28.94	0.13	0.4
MCIC	43.38	23.25	MCI COMMUNICATIONS CORP.	34.19	-0.19	-0.5	CSRV	16.75	8.63	COMPU SERVE CORP.	11.44	-0.44	-3.7
NETM	11.13	2.50	NETMANAGE INC.	3.50	0.38	12.0	EDFY	26.25	8.88	EDIEY CORP.	13.88	-2.63	-15.9
NTRX	8.50	1.44	NETRIX CORP.	2.25	-0.13	-5.3	XCIT	21.63	5.00	EXCITE, INC.	18.13	0.56	3.2
NCDI	16.25	3.13	NETWORK COMPUTING DEVICES	8.75	-0.38	-4.1	SEEK	11.50	4.38	INFOSEEK CORP.	5.75	-0.50	-8.0
NWK	20.88	11.13	NETWORK EQUIPMENT TECH.	19.56	0.31	1.6	LCOS	22.75	5.75	LYCOS INC.	17.75	0.50	2.9
NETG	30.25	11.13	NETWORK GENERAL	16.00	0.69	4.5	NETC	24.25	7.88	NETCOM ON-LINE	14.75	0.31	2.2
NN	52.06	21.00	NEWBRIDGE NETWORKS CORP.	50.75	-0.31	-0.6	NSCP	65.00	23.50	NETSCAPE COMM. CORP.	37.63	1.63	4.5
NT	107.19	46.75	NORTHERN TELECOM LTD.	102.81	-1.00	-1.0	OMKT	25.50	6.50	OPEN MARKET INC.	10.50	-1.00	-8.7
NOVL	13.00	6.28	NOVELL INC.	7.50	0.44	6.2	PSIX	14.50	5.00	PSI.NET	8.63	0.13	1.5
NYN	59.88	42.00	NYNEX CORP.	54.81	0.31	0.6	QDEK	9.88	2.50	QUARTERDECK CORP.	2.72	-0.03	-1.1
OCTL	31.75	13.50	OCTEL COMMUNICATIONS CORP.	30.31	0.00	0.0	RAPT	25.75	8.88	RAPTOR SYSTEMS	12.13	-0.31	-2.5
ODSI	24.25	9.75	OPTICAL DATA SYSTEMS INC.	11.25	-0.25	-2.2	SCUR	16.25	4.75	SECURE COMPUTING CORP.	5.63	-0.69	-10.9
PCTL	39.75	8.25	PICTURETEL CORP.	10.38	0.72	7.4	SPYG	20.25	6.00	SPYGLASS INC.	7.88	-0.25	-3.1
PTON	4.25	1.31	PROTEON INC.	1.75	0.00	0.0	YHOO	55.00	16.25	YAHOO! INC. (H)	54.75	7.75	16.5
RACO	6.38	1.50	RACOTEK INC. (L)	1.63	0.06	4.0	Semiconductors						
RETX	9.25	3.38	RETX	4.13	-0.31	-7.0	UP 5.58%						
SBC	62.25	46.00	SBC COMMUNICATIONS	58.56	0.19	0.3	AMD	48.50	11.75	ADVANCED MICRO DEVICES	36.81	1.25	3.5
SFA	23.50	12.38	SCIENTIFIC ATLANTA INC.	20.88	-0.25	-1.2	ADI	33.88	14.63	ANALOG DEVICES INC.	31.50	0.25	0.8
SHVA	63.50	8.25	SHIVA CORP.	10.75	-0.13	-1.1	CHPS	26.50	7.88	CHIPS AND TECHNOLOGIES	16.94	3.75	28.4
FON	52.75	35.13	SPRINT CORP.	47.94	-1.81	-3.6	CRUS	24.25	8.00	CIRRUS LOGIC	13.50	0.75	5.9
SMSX	15.25	8.25	STANDARD MICROSYSTEMS CORP.	12.00	-0.06	-0.5	CY	16.94	9.75	CYPRESS SEMICONDUCTOR CORP.	15.75	1.19	8.2
USW	39.44	27.25	U S WEST INC.	36.13	-0.88	-2.4	CYRX	30.00	11.50	CYRIX	25.25	4.13	19.5
XIRC	31.13	7.50	XIRCOM	13.06	0.50	4.0	INTC	93.25	36.63	INTEL CORP. (H)	93.25	3.25	3.6
XYLN	59.38	12.38	XYLAN CORP.	16.00	-0.31	-1.9	LSCC	69.44	23.63	LATTICE SEMICONDUCTOR	68.25	4.13	6.4
PCs and Workstations							UP 1.23%						
AAPL	27.75	12.75	APPLE COMPUTER INC.	18.13	1.63	9.8	LSI	46.88	18.75	LSI LOGIC CORP.	32.00	0.38	1.2
ASTA	6.38	3.94	AST RESEARCH INC.	5.13	-0.13	-2.4	MCRL	70.63	15.25	MICREL SEMICONDUCTOR INC. (H)	65.38	0.63	1.0
CPQ	57.19	20.50	COMPAQ COMPUTER CORP. (H)	57.19	2.36	4.3	MU	49.94	18.38	MICRON TECHNOLOGY	49.38	4.19	9.3
DELL	86.75	13.13	DELL COMPUTER CORP. (H)	84.88	2.63	3.2	MOT	90.50	44.13	MOTOROLA INC.	79.94	0.38	0.5
GTW	46.25	18.88	GATEWAY 2000 INC. (H)	38.63	-2.00	-4.9	NSM	37.56	13.75	NATIONAL SEMICONDUCTOR	31.38	-2.00	-6.0
HWP	70.88	39.75	HEWLETT PACKARD CO.	69.06	3.25	4.9	TXN	119.50	42.25	TEXAS INSTRUMENTS	119.13	3.13	2.7
MUEI	25.38	12.00	MICRON INTERNATIONAL INC.	18.75	0.25	1.4	VLSI	31.13	11.75	VLSI TECHNOLOGY	31.13	2.38	8.3
NIPNY	74.00	51.94	NEC AMERICA	72.75	1.75	2.5	XLNX	58.50	29.25	XILINX	48.44	0.81	1.7
SGI	28.38	12.63	SILICON GRAPHICS	24.69	-0.56	-2.2	ZLG	29.50	14.88	ZILOG INC.	24.19	0.00	0.0
SUNW	47.88	25.38	SUN MICROSYSTEMS INC.	44.88	-2.00	-4.3	Peripherals and Subsystems						
Large Systems							UP 4.33%						
AMH	14.00	8.13	AMDAHL CORP.	11.81	1.75	17.4	ADPT	46.88	19.38	ADAPTEC INC.	42.00	-0.88	-2.0
DGN	32.00	9.88	DATA GENERAL CORP. (H)	29.81	-1.00	-3.2	APCC	31.50	11.63	AMERICAN POWER CONVERSION	25.13	0.13	0.5
DEC	42.94	25.00	DIGITAL EQUIPMENT CORP. (H)	40.94	-1.31	-3.1	CREAF	25.25	3.50	CREATIVE TECHNOLOGY LTD. (H)	20.00	-3.50	-14.9
IBM	108.44	51.88	IBM (H)	104.31	-2.19	-2.1	RACE	24.50	5.00	DATA RACE INC.	9.81	-0.25	-2.5
MDCD	9.75	2.88	MERIDIAN DATA INC.	4.13	0.06	1.5	DTM	12.50	5.88	DATARAM CORP.	10.25	0.50	5.1
NETF	4.38	0.88	NETFRAME	0.97	0.00	0.0	EMC	51.69	18.88	EMC CORP. (H)	49.81	0.81	1.7
PRCM	20.13	9.00	PROCOM TECHNOLOGY INC.	10.06	-0.56	-5.3	EMLX	21.25	13.00	EMULEX CORP.	15.63	1.00	6.8
SQNT	29.31	10.75	SEQUENT COMPUTER SYS. (H)	29.31	2.19	8.1	ESCC	29.75	20.00	EVANS AND SUTHERLAND	28.63	1.38	5.0
TEXM	3.88	2.00	SEQUOIA SYSTEMS INC.	3.00	0.25	9.1	EXBT	17.50	9.50	EXABYTE	11.75	0.00	0.0
SRA	56.75	17.25	STRATUS COMPUTER INC.	53.75	4.56	9.3	IISLF	2.63	1.13	INTELLIGENT INEO. SYSTEMS (L)	1.34	0.03	2.4
TDM	29.56	10.25	TANDEM COMPUTERS INC. (H)	29.56	1.75	6.3	IOM	27.00	12.63	IOmega Corp.	22.13	0.13	0.6
UIS	10.19	5.75	UNISYS CORP. (H)	10.19	1.25	14.0	IPLS	2.88	0.94	IPL SYSTEMS INC.	1.38	0.13	10.0
Software							UP 0.89%						
ADBE	49.00	29.63	ADOBE SYSTEMS INC.	37.31	-0.94	-2.5	KMAG	36.75	15.31	KOMAG INC.	21.00	2.94	16.3
AMSWA	8.94	3.75	AMERICAN SOFTWARE INC.	8.94	1.81	25.4	MTSI	30.38	12.88	MICRO TOUCH SYSTEMS INC. (H)	27.63	-0.88	-3.1
APLX	40.00	3.13	APPLIX INC.	5.88	-0.25	-4.1	MTIC	6.31	1.69	MTI TECHNOLOGY CORP. (H)	5.94	-0.06	-1.0
ARSW	50.50	17.00	ARBOR SOFTWARE	43.00	0.13	0.3	PNCL	8.75	0.59	PINNACLE MICRO INC.	0.88	-0.25	-22.2
ADSK	42.88	18.50	AUTODESK INC.	41.38	0.38	0.9	AQM	6.38	2.38	QMS INC.	3.13	0.00	0.0
BGSS	32.50	20.75	BGS SYSTEMS INC.	27.50	0.00	0.0	QNTM	29.94	6.00	QUANTUM CORP. (H)	29.06	0.31	1.1
BMCS	62.38	29.38	BMC SOFTWARE INC.	60.38	2.38	4.1	RDUS	2.19	0.19	RADIUS INC.	0.41	0.06	18.2
BOOL	27.50	15.63	BOOLE AND BABBAGE	27.00	0.75	2.9	SEG	56.25	22.63	SEAGATE TECHNOLOGY	40.88	0.25	0.6
BORL	9.13	4.75	BORLAND INT'L INC.	8.13	0.81	11.1	SOS	19.63	9.75	STORAGE COMPUTER CORP.	11.75	0.38	3.3
BOBY	26.50	6.75	BUSINESS OBJECTS (L)	6.88	-0.63	-8.3	STK	54.38	32.63	STORAGE TECHNOLOGY	50.00	0.44	0.9
CAYN	6.25	2.44	CAYENNE SOFTWARE INC.	2.56	-0.19	-6.8	TEK	65.25	37.00	STRATONIX INC.	61.94	-1.56	-2.5
CNTR	5.88	1.13	CENTURA SOFTWARE	2.00	0.25	14.3	WDC	44.50	14.00	WESTERN DIGITAL CORP.	39.13	0.44	1.1
CHKPF	36.25	15.25	CHECKPOINT SOFTWARE TECHNOLOG	36.25	-1.00	-3.6	XRX	84.00	44.63	XEROX CORP.	81.44	3.38	4.3
COGNF	39.50	19.75	COGNOS INC.	29.63	1.88	6.8	Services						
CA	70.00	37.25	COMPUTER ASSOCIATES	66.94	-0.94	-1.4	UP 1.35%						
CVN	10.38	3.13	COMPUTERVISION CORP.	3.38	-0.31	-8.5	AMSY	37.13	15.75	AMERICAN MGMT. SYSTEMS	25.88	-0.56	-2.1
CPWR	62.25	20.13	COMPUWARE CORP. (H)	60.63	1.00	1.7	ANLY	39.75	17.50	ANALYSTS INT'L (H)	38.75	-0.75	-1.9
CSRE	24.00	8.69	COMSHARE INC.	8.69	-2.56	-22.8	AUD	50.44	38.00	AUTO DATA PROCESSING	48.88	0.13	0.3
CSOFF	10.75	5.00	COREL CORP.	6.06	0.38	6.6	BDMI	30.75	19.75	BDM INTERNATIONAL INC.	25.75	0.88	3.5
DWTI	6.63	2.25	DATAWARE TECHNOLOGIES INC.	3.25	-0.13	-3.7	CATP	38.94	21.25	CAMBRIDGE TECH. PARTNERS	37.38	1.06	2.9
FILE	36.50	9.50	FILENET CORP.	17.63	-1.13	-6.0	CEN	53.13	29.50	CERIDIAN CORP.	42.88	0.88	2.1
FRTI	47.00	7.25	FORTE SOFTWARE	11.00	0.00	0.0	CDO	29.44	15.88	COMDISCO INC.	27.75	-1.38	-4.7
FTPS	9.50	3.50	FTP SOFTWARE INC. (L)	3.81	0.13	3.4	CPU	30.88	13.25	COMPU\$A INC.	25.88	1.50	-5.5
HUMCF	38.50	22.00	HUMMINGBIRD COMM. LTD.	37.38	1.13	3.1	CHZR	45.63	12.88	COMPUTER HORIZONS	40.25	-1.75	-4.5
HYSW	28.75	11.50	HYPERION SOFTWARE CORP.	26.63	0.13	0.5	CSC	86.50	57.88	COMPUTER SCIENCES	80.19	1.88	2.4
IRIC	16.38	11.13	INFORMATION RESOURCES	16.38	1.94	13.4	EGGS	9.38	3.63	COMPUTER TASK GROUP	43.75	2.00	4.8
IFMX	31.13	6.56	INFORMIX CORP.	10.63	-0.81	-7.1	EDS	63.38	31.75	EGGHEAD DISCOUNT SOFTWARE	6.25	1.44	29.9
INGR	12.63	6.25	INTERGRAPH CORP.	9.69									

How to contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
All editors unless otherwise noted below
Main fax number (508) 875-8931
24-hour news tip line (508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
All staff members can be reached via E-mail on the Internet using the form:

firstname_lastname@cw.com.

All IDG News Service correspondents can be reached using the form:

firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:

letters@cw.com.

Please include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path,
Framingham, Mass. 01701

SUBSCRIPTION/BACK ISSUES

Phone (800) 552-4431
E-mail circulation@cw.com.
Back Issues (508) 820-8129

REPRINTS

Phone Michelle Olk, (800) 217-7874

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

DEPARTMENT EDITORS/NEWS

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Neal Weinberg (508) 820-8177
Assistant News Editor Mitch Betts (202) 347-6718
Assistant Sections Editor Michael Goldberg (508) 620-7789
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863

SENIOR EDITORS/NEWS

Groupware, E-mail, messaging Barb Cole-Gomolski (760) 728-8858
LANs, operating systems Laura DiDio (508) 820-8182
Network/systems management Patrick Dryden (817) 924-5485
Application development Sharon Gaudin (508) 820-8122
IS management Thomas Hoffman (201) 587-0090
IS careers Julia King (610) 532-7599
Mainframes, high-end storage Tim Queltette (508) 820-8215
Databases Craig Stedman (508) 820-8120
Midrange hardware Jaikumar Vijayan (508) 820-8220
Unix systems integration
Electronic commerce, Internet Mitch Wagner (415) 548-5513
Internetworking Bob Wallace (508) 820-8214
Intranets Carol Sliwa (508) 628-4731

SENIOR WRITERS/NEWS

@Computerworld Stewart Deck (508) 820-8155
Mobile computing, social issues Kim Girard (415) 548-5155
PCs, servers, net computers April Jacobs (508) 820-8121
Security, government Sharon Machlis (508) 820-8231

STAFF WRITERS/NEWS

New products, multimedia, low-end storage Nancy Dillon (415) 548-5538
Telecommunications Matt Hamblen (508) 820-8567
@Computerworld Patrick Thibodeau (508) 820-8143
Client/server software, Randy Weston (508) 628-4869
Unix applications
@Computerworld Wylie Wong (415) 548-5581

OPINIONS

Columns Editors Kevin Fogarty (508) 820-8246
Michael Goldberg (508) 620-7789
Steve Ulfelder (508) 620-7745
Staff Columnist Frank Hayes (503) 252-0100

DEPARTMENT EDITOR/FEATURES

Technology reviews/ Buyer's Guide James Connolly (508) 820-8144

SENIOR EDITORS/FEATURES

Managing Allan E. Alter (508) 620-7714
Special reports Gary H. Anthes (202) 347-0134
Features writer Kevin Burden (508) 620-7717
Buyer's Guide Cathleen Gagne (508) 620-7729
Investigative reports Kim S. Nash (972) 716-9822
Management Robert L. Scheier (508) 628-4931
In Depth Steve Ulfelder (508) 620-7745
IT Careers David B. Weldon (508) 820-8166

ASSOCIATE EDITORS/FEATURES

Buyer's Guide Amy Malloy (508) 620-7754
Managing Rick Saia (508) 820-8118

IDG NEWS SERVICE CORRESPONDENTS

Paris bureau chief Jeanette Borzo (33) 1-4904-8001
UK correspondent Kristi Essick (44) 171-416-0701
Hong Kong bureau chief Jon Skillings (852) 2535-4661
Tokyo correspondent Rob Guth (81) 33-358-6122

RESEARCH

Bob Fink, senior research manager (508) 820-8115
Laura Hunt, research analyst; Stefanie McCann, senior graphics coordinator; Mari Keefe, online researcher

COPY DESK

Ellen Fanning, managing editor (508) 820-8174;
Roberta Fusaro, assistant managing editor; Christina Aicardi Maguire, Jamie Eckle, David Ramel, senior copy editors; Kimberly Blackburn, Michelle Davidson, senior production copy editors; Pat Hyde, Monica Sambataro, Keith Shaw, copy editors; Jeremy Selwyn, online copy editor.

GRAPHIC DESIGN

Tom Monahan, design director (508) 820-8218; Janell Genovese, associate art director/features; Mitchell J. Hayes, associate art director/news; David Waugh, associate art director/online; Nancy Kowal, senior graphic designer; Carol Lieb, photo researcher/editor; Amira Harari, graphic designers; Rich Tennant, John Klossner, cartoonists.

ADMINISTRATIVE SUPPORT

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139); Beliza Veras-Moriarty (ext. 8172); Chris Flanagan, editorial assistants, (415) 548-5563.

COMPUTERWORLD MAGAZINES GROUP

(Includes Premier 100, Campus Edition, Best Places to Work, Leadership Series, Intranet Series, Emmerce and Health Care Journal.)
Alan Alper, editor (508) 820-8115; Mary Brandel, executive editor; Anne McCrory, Catherine McCrory, Joyce Chutchian-Ferranti, managing editors; Kimberlee A. Smith, assistant managing editor and online coordinator; Mary Beth Welch, art director.

@COMPUTERWORLD

@Computerworld is our World Wide Web site. On it, we publish daily news and feature stories that supplement our print coverage. We also have special audio features, such as interviews with industry notables, and the @Computerworld Minute, which is an audio version of the day's top news.

A few times each week, we also have Links listings. These are resources related to online and/or print stories. We also have polls and forums that you must register for to access. The rest of the site is accessible without registering.

Contact: Johanna Ambrosio, Online Editor, (508) 820-8553 or johanna_ambrosio@cw.com.

Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

3Com Corp.....28	Chevron Research and Technology Co.....41	Executive Software International, Inc.....3	Korn/Ferry International.....1	Pacific Exchange, Inc.....12	StarQuest Software, Inc.....10
A&E Television Network.....79	Chevy Chase Bank.....68	Exodus Communications, Inc.....1	KPMG Peat Marwick.....61	Parker Hannifin Corp.....14	Sterling Commerce, Inc.....1
Aberdeen Group, Inc.....1,14	Chubb & Son, Inc.....68	Fabrik Communications, Inc.....20	Lanacom, Inc.....72	Patricia Seybold Group.....8	Stingray Software, Inc.....1
Access Beyond.....28	Chubb Life Insurance Co. of America.....12	Fallon Healthcare System.....68	Lanier Worldwide.....17	PeopleSoft, Inc.....29,41	Strategic Research Corp.....61
Adelphia Communications Corp.....68	Cinco Networks, Inc.....50	First Floor Software, Inc.....72	Legato Systems, Inc.....55	Peregrine/Bridge	Sun Chemical, Inc.....29
AdMedia Partners, Inc.....79	Cisco Systems, Inc.....4,8,10	Fischer International, Inc.....6	Lennox International, Inc.....41	Transfer Corp.....55	Sun Co.....17
Adobe Systems, Inc.....41	Citibank.....41	Ford Motor Co.....79	Lexis-Nexis.....4	Perot Systems Corp.....28	Sun Microsystems, Inc.....1,2
Advanced Manufacturing Research, Inc.....14	Citicorp.....8	Forrester Research, Inc.....49	LinkAge Software, Inc.....6	Persistence Software, Inc.....55	SunSoft, Inc.....55
Advanced Micro Devices, Inc.....28	Compaq Computer Corp.....2,17,61	Friedman Realty Group.....79	Lockheed Martin Corp.....8	PMP Corporate Systems Ltd.....6	Sybase, Inc.....41
Advanced Technology Systems.....65	CompuSven, Inc.....6	Fujitsu Ltd.....28	Logan Lumber Co.....61	PointCast, Inc.....72	Symantec Corp.....20
Alamo Rent A Car, Inc.....68	Computer Associates International, Inc.....49	Gartner Group, Inc.....1,6,12,14,17,41,55	Lotus Development Corp.....6,12,71	Positive Support Review, Inc.....8	TAD Resources
AlliedSignal, Inc.....1,68	Computer Sciences Corp.....3	GE Capital Corp.....79	Marimba, Inc.....72	Prism Solutions, Inc.....55	International, Inc.....79
Allmerica Financial Corp.....47	Computer Task Group, Inc.....65	General Electric Information Services.....1	Mark Adams Associates.....1	Proffitt's, Inc.....79	The Chase Manhattan Bank Corp.....1,79
Amdahl Corp.....28	Concord Communications, Inc.....8	Giga Information Group.....2	Marshall's, Inc.....79	Progressive Networks, Inc.....47	The Depository Trust Co.....79
American Credit Indemnity Co.....1	Connectix Corp.....50	Global Marine.....41	MasterCard International, Inc.....1	Prudential Insurance Co. of America.....79	The Foxboro Co.....14
American Express Co.....1	Contingency Planning Research, Inc.....41	GTE Corp.....75	McAfee Associates, Inc.....20	Prudential Securities, Inc.....61	The Mining Co.....41
Analysts International Corp.....75	CPI Corp.....55	Hayes Microcomputer Products, Inc.....28	MCI Communications Corp.....49	QDB Solutions, Inc.....55	The Pillsbury Co.....79
Andersen Consulting.....3,79	Creative Design Solutions, Inc.....61	Hewlett-Packard Co.....3,14,41,49,61	Meridian Research, Inc.....16	Quantum Corp.....61	The Registry, Inc.....4,10
Anheuser-Busch, Inc.....79	Creative Networks, Inc.....6	Hilife, Inc.....41	Merrill Lynch & Co.....61	Raytheon Co.....65	The Standish Group International, Inc.....55
Apple Computer, Inc.....28	Cromwell Partners LLC.....24	Hitachi Data Systems Corp.....28	Meta Group, Inc.....14,24	ReliaStar Financial Corp.....79	The Tower Group.....16,41
Arescom, Inc.....50	Cyrix Corp.....28	Hoechst Marion Roussel, Inc.....8	MicroAge, Inc.....6,79	Republic Industries, Inc.....79	Tibco, Inc.....8,72
ARGO Data Resource Corp.....41	Data General Corp.....61	Honeywell, Inc.....14,65	MicroCosm.....78	Rich Products Corp.....49	Tivoli Systems, Inc.....49
AT&T Corp.....1,17,41	DataChannel Corp.....72	Household Finance Co.....12	Microplex Systems Ltd.....50	RSA Data Security, Inc.....20	Toshiba America Information Systems, Inc.....17
ATL Products, Inc.....61	Datapro Information Services Group.....28	IBM.....2,8,10,12,14,17,28,49,61,71,79	Microsoft Corp.....1,2,3,6,12,14,41,47,49,50,55,65,71,72,101	Russell Reynolds Associates.....1	Towers Perrin.....65
Attachmate Corp.....8	David Strom, Inc.....47	InCommon, Inc.....72	Millbrook Distribution Services.....79	Rutherford, Brown and Catherwood, Inc.....3	Transarc Corp.....8
Avis, Inc.....1,68	Dean Witter Reynolds, Inc.....79	Inflation Systems, Inc.....55	Mobile Gas Service Corp.....41	Salomon Brothers, Inc.....28	UniHealth.....47
Avon Products, Inc.....1,79	Dell Computer Corp.....47,61	Information Builders, Inc.....8	Montgomery Securities, Inc.....17	SAP AG.....8,14,29	Universal Underwriters Group.....65
Axiom Corp.....55	Delphi Consulting Group, Inc.....41	Information Systems Professionals.....41	Morgan Stanley & Co.....47	SAS Institute, Inc.....1	US West, Inc.....1,12
BackWeb Technologies, Inc.....72	Diba, Inc.....8	Informix Software, Inc.....28,55	MTI Technology Corp.....61	Savvis Communications Corp.....49	USAA Information Technology Co.....4
BankAmerica Corp.....1	Digital Equipment Corp.....6,17	Intel Corp.....3,17,28,41,61	National Semiconductor Corp.....1	Schlumberger Ltd.....47	Valtech Ltd.....55
Bank Boston Corp.....41	Doubletree Hotels Corp.....79	International Data Corp.....14,41,55,61	Nations Bank Corp.....49	Sears, Roebuck and Co.....55	VeriSign, Inc.....20,47
BayBank, Inc.....41	Du Pont Co.....3	International Flavor and Fragrances, Inc.....12	NEC Corp.....17	Secure Network Systems.....78	Viacom, Inc.....79
BEA Systems, Inc.....8	Dyncorp Information and Engineering Technology.....41	Iona Technologies, Inc.....55	NetMetrics Corp.....47	Security Dynamics Technologies, Inc.....20	Virtual Networks, Inc.....4
Bendix Aerospace, Inc.....79	Eastman Kodak Co.....3,65	J. D. Edwards & Co.....55	Netscape Communications Corp.....8,41	Security Forces, Inc.....61	Visa International, Inc.....1,55
Beyond Software, Inc.....8	EMC Corp.....65	J. P. Morgan Securities.....28	Neural Applications Corp.....1	Serono Laboratories.....79	Visigenic Software, Inc.....55
Blitz Systems, Inc.....79	Emcon Ltd.....79	Johnson & Johnson.....79	Next Software, Inc.....28	Shared Medical Systems Corp.....49	Wall Data, Inc.....8
Boatman's Trust Co.....49	Ernst & Whinney LLP.....79	Kaiser Permanente Health Plan, Inc.....10	Northern Trust Corp.....49	Shirley Co.....79	Wang Laboratories, Inc.....61
Bristol Hotels & Resorts.....1	Ernst & Young LLP.....12	Karten Associates.....65	Novell, Inc.....6,49	Shiva Corp.....49	Wayfarer Communications.....72
Bull HN Information Systems, Inc.....61	Exabyte Corp.....61	Keyfile Corp.....41	Novus Services, Inc.....1	Simulation Sciences, Inc.....41	Wells Fargo & Co.....1,20
Caliber Systems, Inc.....1	Excite, Inc.....47	Kmart Corp.....79	Omron Electronics, Inc.....49	Spiegel, Inc.....47	Workgroup Strategic Services, Inc.....2,61
Canon Computer Systems.....102			Open Applications Group.....29	Staples, Inc.....79	Yahoo, Inc.....47
Carleton Corp.....55			Oracle Corp.....8,14,29,47,55		York Claims Services.....6
Centum Consultancy.....16			Owens & Minor, Inc.....8		Zona Research, Inc.....49
CFX Corp.....79					
Charles Schwab & Co.....49					
Chemical Banking Corp.....1					

Outsource to cut Web costs

CONTINUED FROM PAGE 1

a way to cut costs and tap in to the expertise and facilities of full-time electronic-commerce experts. "If somebody can do this better and cheaper and allow us to focus on our core competencies — which is to allow us to provide premium transportation services to our customers — then that's what we're going to do," said Dave Edmonds, a vice president at Caliber in Akron, Ohio.

"If you want to [create] an electronic-commerce site, and you add together the cost of personnel, marketing, Internet connectivity, hardware, software and management, you can't get a good site up for less than one hundred or two hundred grand," said Chris Stevens, an analyst at Aberdeen Group, Inc. in Boston. "If it's not part of your core business, it might make sense to hire someone else to do it."

Caliber, a \$2.5 billion company, last week announced a deal worth \$8 million to \$15 million over five years, in which Sterling Commerce, Inc. will manage Caliber's electronic data interchange (EDI) network.

Dublin, Ohio-based Sterling will provide translation services and help desk staff. It will maintain the network and hire staffers from Caliber's 250-person information systems department to do the job.

RISKY BUSINESS

But many experts and users still consider outsourcing a risky proposition for electronic commerce. The technology changes fast, which makes it difficult for companies to write reasonable contracts for outsourcing vendors.

And some companies see electronic commerce as a strategic technology they want to

learn about and control — an opportunity that will be denied them if they outsource.

Chris Sagovac, a senior programmer/analyst at American Credit Indemnity Co. in Balti-

Tips for outsourcing E-commerce

- Be careful about writing specifications in contracts — technology changes fast.
- Manage relationships with vendors closely.
- Keep a small number of relationships.
- Consider partially outsourcing E-commerce, hiring out simple maintenance and keeping the rest in-house.

more, said his company wanted to retain control of its Web site, where companies can go to obtain insurance for accounts receivable. "This is a strategic move to keep the expertise in-house," he said. "And when you're doing it yourself and not relying on someone else, response time is bound to be quicker."

As a compromise, companies sometimes outsource what they consider basic infrastructure services and retain control of more complicated technologies they view as strategic.

National Semiconductor Corp. in Santa Clara, Calif., controls the writing of applications, the user interface, content and customer service. The company outsources Web maintenance to Exodus. "It would have been a lot more expensive to run it in our office," said Clay Shope, operations manager at National

Semiconductor. The company pays about \$5,000 per month to run its Web site at Exodus, which has round-the-clock staffing and a 10M bit/sec. Internet connection. Developing the service in-house would have cost about \$100,000 per year for staffing, plus another \$100,000 for Internet connectivity.

Meanwhile, vendors are moving in with outsourcing services for electronic commerce.

Exodus officials last week said the firm will open data centers in Seattle, Los Angeles and Washington by Sept. 15 for hosting corporate Web sites. Exodus also has a data center at its headquarters in Santa Clara, Calif.

GEIS today will announce upgrades to TradeWeb, its EDI-based network of companies buying and selling business-to-business goods and services on the Web. The update adds internationalization features, including currency conversion, local taxes and the ability to automatically check transactions for violations of local law, currency conversion. The upgrades are available immediately. □

Users bemoan threat to cross-platform Java

CONTINUED FROM PAGE 1

to throw a roadblock at Java.

"As a Java programmer, I am being forced to make choices and will have to do more work because Microsoft refuses to ship [Java Foundation Classes] on [Internet Explorer] or Windows," complained Charles Kerr, a programmer/analyst at OAO Corp. in Oklahoma City. "They could bundle the [graphical user interface] components in over lunch, because they're written in straight Java."

PERCEIVED THREAT

Like the Tyrannosaurus rex protecting its turf in *The Lost World: Jurassic Park*, Microsoft executives raised their guard against the perceived threat posed by Sun's Java Foundation Classes (JFC). Microsoft views the libraries of reusable code as a competing operating system that will bloat Windows.

But Sun and cross-platform Java devotees dispute those operating systems claims. The

class libraries are no more than 1.5M bytes, Sun officials said. By contrast, Windows 95's recommended memory requirement is 16M bytes. The JFCs are

"The real meaning of this is that Microsoft doesn't really stand behind Java. There were always questions of how much of Microsoft's acceptance of Java was for real."

— Motti Goldberg, US West

merely an "interface layer to the operating system," said Jon Kannegaard, a vice president at Sun's JavaSoft division.

"It would have to be a tremendous amount of classes to get it to a level of functionality that is

anywhere near that of an operating system," said Patrick Connolly, vice president of the Investors Edge business group at Neural Applications Corp. Connolly's unit uses software that analyzes stock market data.

Kannegaard said he was surprised by Microsoft's hard-line stance given that JavaSoft executives recently met with Microsoft officials to discuss contractual issues.

Many developers see the merit in Microsoft's worries and its motherhen reaction.

But they said they are afraid the Redmond, Wash., software giant will slow down and perhaps even kill Java's progress as a cross-platform language.

"The real meaning of this is that Microsoft doesn't really stand behind Java," said Motti Goldberg, chief architect at US West, Inc.,

which plans to deploy cross-platform Java applications in the future. "There were always questions of how much of Microsoft's acceptance of Java was for real."

Goldberg said modern lan-

guages all come with class libraries, which in the case of the JFCs, can be used to build components such as tool bars and buttons or to access services such as drag-and-drop and keyboard navigation capabilities.

FIGHTING BACK

Microsoft senior executives two weeks ago launched an offensive against the Java class libraries, claiming they aren't legally required to ship the class libraries with their Internet Explorer browser.

Charging that Java really doesn't run cross-platform, they said the "Java language" should be distinguished from Java "class libraries" that ship with the virtual machine.

"Sun officials have been predicting that Microsoft will ship JFC someday. I assign this exactly the same probability as Sun shipping Windows NT," said Cornelius Willis, Microsoft's director of platform marketing.

Microsoft offers its own Application Foundation Classes as an alternative to the JFCs and tells developers to use J/Direct to gain access to Windows application programming interfaces (API) without using Java APIs.

But developers such as Dave Moffat at SAS Institute, Inc. in

Cary, N.C., have been waiting for the JFCs to write user interfaces for applications. SAS chose Java for its cross-platform promise, he said.

If Microsoft doesn't ship the JFCs, Moffat said, he would have to write one version of the applications for Windows and another for Macintosh, Unix and other operating systems. "Or I have to make [the application] sit there while it downloads," he said.

Moffat said he thinks Java's cross-platform problems are being ironed out. "This is just part of Microsoft's disinformation strategy, and they're trying to make it a self-fulfilling prophecy," he said.

But some users said Microsoft is right to optimize Java for Windows because it is the predominant platform.

"It's killing Java as a cross-platform operating system, but it's good for Java as a language," said Scot Wingo, co-founder of Stingray Software, Inc. in Morrisville, N.C.

"Microsoft is simply trying to position itself better," said William Stewart, co-webmaster at the Chicago Board of Trade. "If Microsoft has better ideas, they should use them. Who says Sun has all the answers?" □



COMMENTARY

Microsoft song and dance masks real sore points

David Coursey

It's an interesting ritual: Microsoft executives promoting pessimism, talking about what could go wrong. "Maybe the market is saturated." "Maybe we'll have to invest more than we expect." "Someday we'll have to make good on all those employee stock options we've handed out." "Low-end devices require a big investment." "R&D spending is increasing rapidly."

It's a surreal experience, listening to Bill Gates, Steve Ballmer and the rest of the boys at Microsoft's annual financial analysts' briefing do their best to explain all those looming disasters.

The briefing was held two weeks ago in Seattle. It was, if not a joke, at least a game played more for ritual than substance. Implicit in the cautious forecasts is the winking disclaimer, "We're not really serious. Things look darn good."

Microsoft knows it's talking about things that *might* happen, rather than things that *will* happen. Wall Street knows it, too. So Microsoft sells pessimism for a few minutes during its futur-

istic show-and-tell. And the analysts write their rosy predications, adding the occasional Microsoft-supplied caveat, just in case.

Given as I am to raining on people's parades, I'd like to suggest some things Microsoft *should* be worried about but that executives mentioned only in passing or not at all:

Product quality. While Bill and the boys (they're almost all boys, anyway) were talking about the wonders of

natural-language interfaces, I was asking attendees how often their systems crash. The best advice from the power users was: Wipe your disk, reinstall Windows 95 every 90 days, and you'll be fine. Otherwise, a heavily used system tends to become unstable over time — mostly because of new software installations. Microsoft says it's putting huge resources into these issues. But to me, it looks like Priority 1 is slapping an Internet user interface on everything, not fixing the code underneath. Windows 95 just isn't stable enough.



Thin clients. Microsoft worries about thin clients. That's why it has so many initiatives aimed at the heart of the network computer.

Customers should remember that Microsoft never strays far from the critical path. That's reason enough to wonder what will happen if the network computer dies. Will Microsoft follow through on projects that helped kill it? It's also reason to wonder what will happen if Microsoft van-

quishes JavaSoft.

Antitrust. The monopoly issue still hangs over Microsoft's head, though allowing the company full reign over desktop computing seems to have become accepted public policy. Gates says he wonders why people are calling Microsoft a media company when media is such a small part of its business. But as Microsoft reaches out to TV, Web broadcasting and other new media, I think the government will take another look. But it may be 2002 before that happens.

NT questions. Windows NT still isn't an enterprise operating system, Microsoft scalability demonstrations notwithstanding. I consistently hear from customers that NT is a small-business or departmental solution.

Should investors dump their Microsoft shares because of these issues? If I had any, I wouldn't. But however rosy the company's future may seem, even Microsoft faces questions. You just have to know what to ask. □

Coursey, an analyst and consultant, is editor of "coursey.com," an online newsletter available at www.coursey.com. His E-mail address is david@coursey.com.

Year 2000: a regular laff riot

Frank Hayes

It's official: The year 2000 problem is now mainstream. We know that because humorist Dave Barry made fun of it last week. (Dave's recommended solution: Hire Skip, the handyman who fixed Dave's leaky roof. Skip fixed that in a few hours, and for a very reasonable price. So why not the Millennium Bug, too?)

So does that mean the year 2000 hang-up is so well understood that we can all laugh about it now?

Yeah, right.

What this newfound mainstream popularity actually means is pure misery for year 2000-weary IS shops. It marks the beginning of an onslaught of publicity that will trot out every imaginable piece of millennial misinformation — and in the process vilify just about everyone, living or dead, who has ever created a computer system.

Sure, *Computerworld* and other IS publications have been writing about the year 2000 problem. Business weeklies have printed their cover stories. Airline in-flight magazines have run their articles.

But that's just the tip of the media ice-

berg that's coming into range for this IT *Titanic*. And as mainstream media endlessly rediscover the year 2000 story, the amount of oversimplification and uninformed opinion will rise exponentially — as common sense vanishes.

Are government agencies running late with fixes for their year

2000 problems? That makes it a political problem, with all the usual pontification and pulpit-pounding from politicians and pundits.

Cranky newspaper columnists and TV commentators who can't get a three-year

renewal on their credit cards or their driver's licenses will add their voices to the din. So will young reporters who don't know the first thing about databases or systems development, but who know the editor wants a story about how computers will collapse when 1999 turns into 2000.

In the next two years or so, you'll read plenty about wild accusations, conspiracy theories and quack cures.

And yes, it will get personal. You'll hear your IS predecessors being called nitwits for having created the problem. And you'll hear yourself being called a numbskull for not having fixed it already.



OPEN SEASON

IS shops will be the target for every irresponsible, irrational idiot who discovers the year 2000

problem and knows how to get his opinion or theory to a newspaper, magazine, newsletter or radio or TV station.

You'll be blamed. You'll be pilloried. You'll be slandered. You'll be hanged in effigy.

And although most of the clueless cranks whaling away at you won't have any idea what they're talking about, you'll still have to march up to the executive suite again and again, as wave after wave of misinformation washes through.

This time you won't be explaining what needs to be done or why it's urgent. No, this time you'll explain that, yes, you remembered to fix the data. And the applications. And the operating systems. And the PCs. You'll debunk one crackpot year 2000 idea after another as they're endlessly repeated and begin to worry even your most placid executives.

You'll repeat over and over that there's no one to sue, that it isn't an IBM or Microsoft plot, that the problem wouldn't go away with even the most liberal application of Java, the Internet and "convergence."

And all that, of course, is after you've actually fixed your year 2000 problems.

So if you thought Dave Barry's column was funny — well, so did I.

Now let's see how much longer we can keep laughing. □

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

alt.cw

Dispatches & images from the fringes of the electronic frontier

Digital archives



20 YEARS AGO (AUGUST 1977)

- **Headline: DP center** bombings plague Italy
- **Radio Shack** announces the TRS-80 microcomputer with the Z80 chip, 4K bytes of RAM, a tape cassette and black-and-white display. It costs \$600.
- **Headline: Personal computers** seen [as a] luxury only

10 YEARS AGO (AUGUST 1987)

- **Headline: C language** gains in popularity for development
- **Microsoft** ships MS-DOS 3.3.
- **Headline: Borland** set to challenge 1-2-3
- **Apple** introduces HyperCard for the Macintosh.
- **Headline: Fortune 500** slowly warming to PS/2

'WORLD'S SMALLEST SCANNER'

Snap in a matchbook-size car-

tridge in place of the usual

printer head,

and you can

transform an

ink-jet printer

into a sheet-fed

color scanner.

Canon Computer Systems in Costa Mesa, Calif., claims

the \$99 cartridge is the world's smallest color scanner,

but the device works only on Canon's BJC-4304 Photo

printer. The IS-22 car-

tridge will ship in Sep-

tember. The scanner

features 24-bit

color and 360

dot/in. resolu-

tion.



Legal brief

Attorney Charles L. Gholz, a partner at Arlington, Va., law firm Oblon, Spivak, McClelland, Maier & Neustadt, filed a CD-ROM brief — full of hypertext links — with a federal appeals court July 24. The filing marked the first time a federal circuit court accepted a brief on CD-ROM.

Inside Lines

Trash talk

It was 20 years ago — Aug. 3, 1977 — that the Radio Shack division of Tandy launched the first mass-market computer: the TRS-80 Model 1. Its specifications were an 8-bit, 1.77-MHz Z80 processor from Zilog Corp.; 4K bytes (not megabytes) of memory, expandable to a whopping 52K bytes; a monochrome monitor; and a cassette port for loading programs from tape. To keep prices low, Tandy buyers scored a load of cheap black-and-white monitors in gray plastic cases. They painted the computers to match and dubbed the look "Mercedes Gray." But when a customer's hands would rub the color off the keyboard, ingenious Radio Shack salesmen learned to restore the look in the back room with a spray can of General Motors primer gray.

SAP, Intel in E-commerce deal

German software maker SAP AG and chip maker Intel in Santa Clara, Calif., are hooking up to develop an electronic commerce system using the Internet. The two computing giants are expected to release details of the project Tuesday. The joint project is to develop ways to link suppliers to customers for electronic commerce transactions. An SAP official said the system is independent of any of SAP's R/3 development plans and will be an entirely new product. But he said the electronic-commerce piece will use business processes contained in R/3 and that can be tied back to R/3.

It's a Live

Storage Technology is preparing to announce a software tool called Live Attach that lets Windows NT servers send data directly to the Louisville, Colo., company's line of high-end tape storage libraries. StorageTek already offers a low-end tape library called the Timberwolf 9730 for Windows NT LANs. But with Windows NT data starting to play a more prominent part in business enterprise operations, users can connect directly to the high-end tape systems providing backup and restore to mainframes and Unix servers.

Let the litigation begin

The long-awaited flood of year 2000 legal problems has begun, and it's about ... T-shirts! Dave Bettinger, who is a year 2000 project communications coordinator at mail-order retailer L. L. Bean, sells the shirts part time. He got most orders through a link with a year 2000 information site maintained by Canadian year 2000 guru Peter de Jager. According to Bettinger's home page, a Canadian firm has obtained a Canadian trademark on the year 2000 and claimed that the link from de Jager's site to the T-shirt offer is a violation of Canadian trademark law. When the Canadian firm threatened to file suit, Bettinger cut the link — and T-shirt orders fell 90% within three days.

It's all French to us

Oh, those romantic French. The Paris newspaper *La Tribune* scored an interview with Oracle CEO Larry Ellison last week in which Ellison confirmed he will join Apple's board and assured everyone that Steve Jobs would officially take the reins at the company (see related story, page 28). But the real fun was in the paper's over-the-top writing style. *La Tribune's* headline blared, "Larry Ellison is ready to save Apple." The article said Ellison "was completely at ease in the calm of his Japanese home" and went on to say that Ellison spilled the beans "with a devilish grin."

Bay serves up remote access

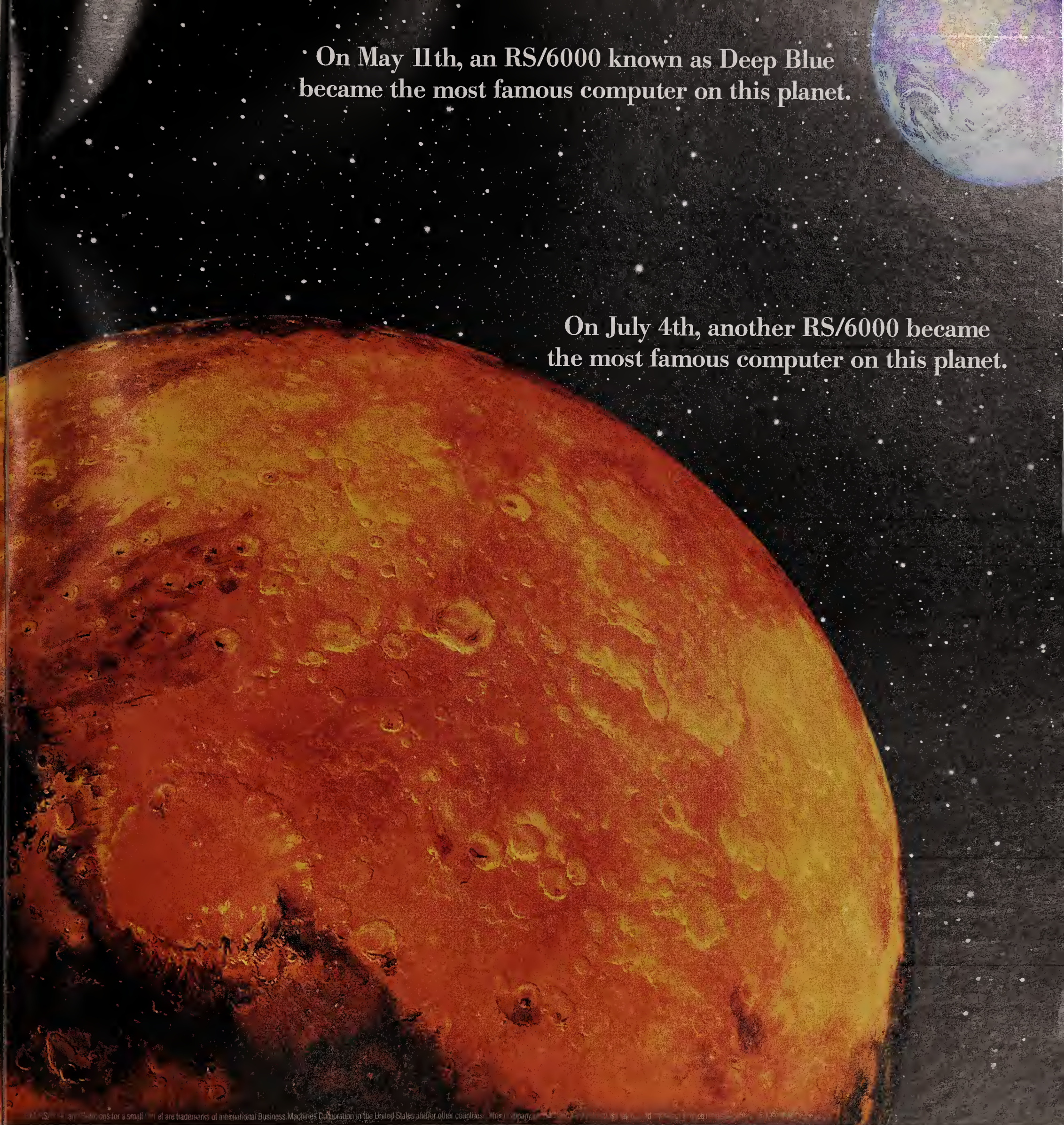
A Bay Networks source said the Santa Clara, Calif., vendor next week will announce a smaller version of its high-end MSX-5000 remote access server for users, carriers and Internet service providers.

Netizen views on the hereafter

Eternal life on another level	33.6%
When you die, that's it	18.3%
Reincarnation	16.5%
Resurrection	15.3%
Don't know what to believe	13.4%
No answer	2.8%

Base: 6,300 World Wide Web users

And finally, a little 'net-derived humor to brighten your day, courtesy of one of our alert readers. This is the proposed dictionary definition of Windows 95: noun. 32-bit extensions and a graphical shell for a 16-bit patch to an 8-bit operating system originally coded for a 4-bit microprocessor, written by a 2-bit company that can't stand 1 bit of competition. Send your humorous items to news editor Patricia Keefe at (508) 820-8183 or patricia_keefe@cw.com.



On May 11th, an RS/6000 known as Deep Blue
became the most famous computer on this planet.

On July 4th, another RS/6000 became
the most famous computer on this planet.

The same IBM RS/6000™ technology that as "Deep Blue" competed against world chess champion Garry Kasparov is also conquering deep space. For the Mars Pathfinder mission, NASA and Lockheed Martin had only one shot at success. Their solution: an onboard flight computer based on ever-reliable and powerful RS/6000 technology.

From launch to landing, the computer was responsible for over 100 mission-critical events. On Mars, it's controlling vital communications between Earth, the Pathfinder lander and the 22-pound Sojourner rover.

But you don't have to be a grand master or a rocket scientist to benefit from RS/6000 technology. More than 600,000 RS/6000 systems are in use around the world (Earth, that is), handling everything from massive data warehouses to mega-Web sites to large-scale simulations.

For a closer look at the computer technology that's taking this and other worlds by storm, visit www.rs6000.ibm.com



Solutions for a small planet™

When you're shelling out \$4,000,000 to ring in the Year 2000, remember:

SAS[®] software didn't drop the ball.

While other software companies scramble to help you adapt your programs to handle the Year 2000 crisis, SAS Institute has just one question: *What* crisis? SAS software solutions—from data warehousing to data mining, OLAP to applied analysis—are ready to handle dates through the year 20,000 AD. And you can easily change the interpretation of two-digit years to the 100-year span of your choice.

SAS software customers won't need to shell out the estimated \$3-\$4 million it will cost the average company to address the Year 2000 issue. So isn't it time you invested in the world's best decision support solutions? From a vendor that will keep you on the leading edge of technology into the new millennium—and beyond? Just visit us at www.sas.com/y2k/ or call 919-677-8200.



SAS Institute Inc.

The Business of Better Decision Making

E-mail: cw@sas.com

www.sas.com/y2k/

919.677.8200

In Canada 1.800.363.8397

SAS is a registered trademark of SAS Institute Inc. Copyright © 1997 by SAS Institute Inc.